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Southern Medical Association, Thirty-Eighth Annual Meeting, St. Louis, Missouri, November 13-16

TABLE OF CONTENTS

Posthepatitis Syndrome. Charles M. Caravati, Richmond, Virginia 251

Discussed by Jas. Asa Shield, Richmond, Va.; Julian M. Ruffin, Durham, N. C.

Trichlorethylene in Dental Anesthesia. James H. Bennett, Cincinnati, Ohio 257

The Army Medical Museum in This War. J. E. Ash, Washington, D.C. 259

Stab Wounds of the Heart and Pericardium. Hugh Linder and Henry Hodo, Birmingham, Alabama 261

Some Problems of Injured Ankles with Negative X-Ray Findings. Ralph G. Carothers, Cincinnati, Ohio 266

Discussed by Lloyd J. Netto, West Palm Beach, Fla.

Treatment of Resistant Cases of Enuresis by Presacral Neurectomy. Rex E. Van Duzen, Dallas, Texas 267

The Biological Activity of Various Estrogens. Willard M. Allen, St. Louis, Missouri 270

Ocular Headaches. E. H. Cary, Dallas, Texas 280

Health and Our Neighbors. Felix J. Underwood, Jackson, Mississippi 284

Is There an Anxiety Component To Every Complaint? Spafford Ackerly, Louisville, Kentucky 287

Discussed by Edward E. Landis, Louisville, Kentucky.

Some General Remarks on the Prevention of Irritation and Sensitization of the Skin to Chemical Compounds. Leon Goldman, Cincinnati, Ohio 290

EDITORIALS 302

Southern Medical Meeting, St. Louis, 1944
Tropical Medicine and Post-War Health Program
Liver Injury Following Vaccinations
Twenty-Five Years Ago

CORRESPONDENCE 304

Dermatologic Problems in General Practice. Paul A. O'Leary, Rochester, Minnesota.

BOOK REVIEWS 304

EXECUTIVE COMMITTEE MEETING 306

OFFICERS, Southern Medical Association and organizations meeting conjointly 307

SOUTHERN MEDICAL NEWS 308

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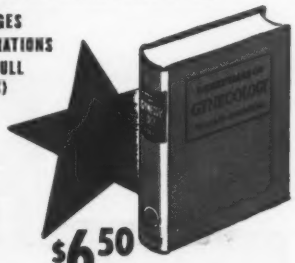

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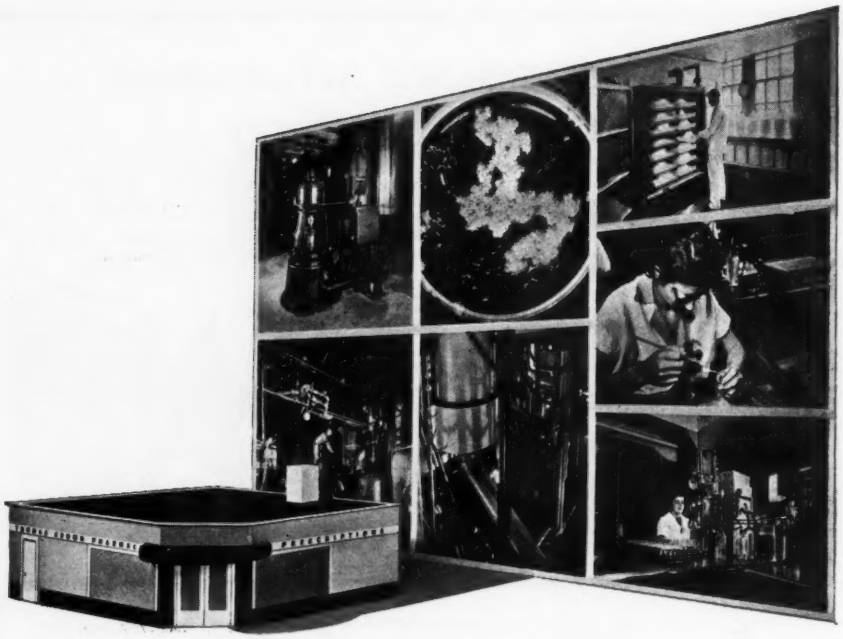

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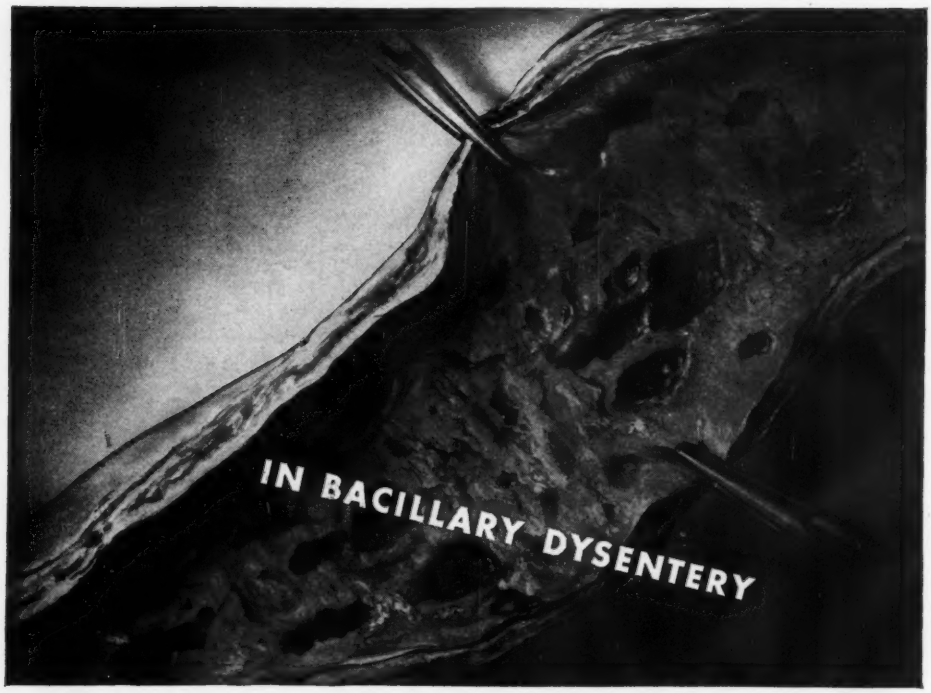

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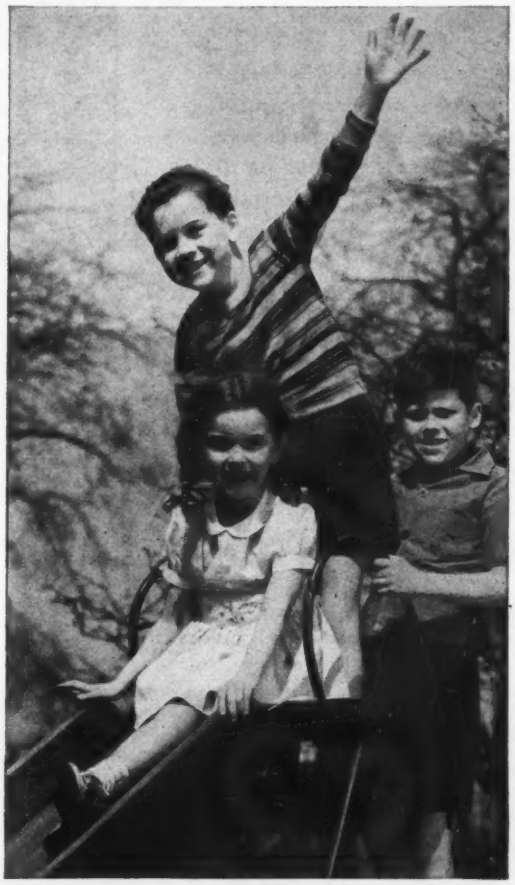

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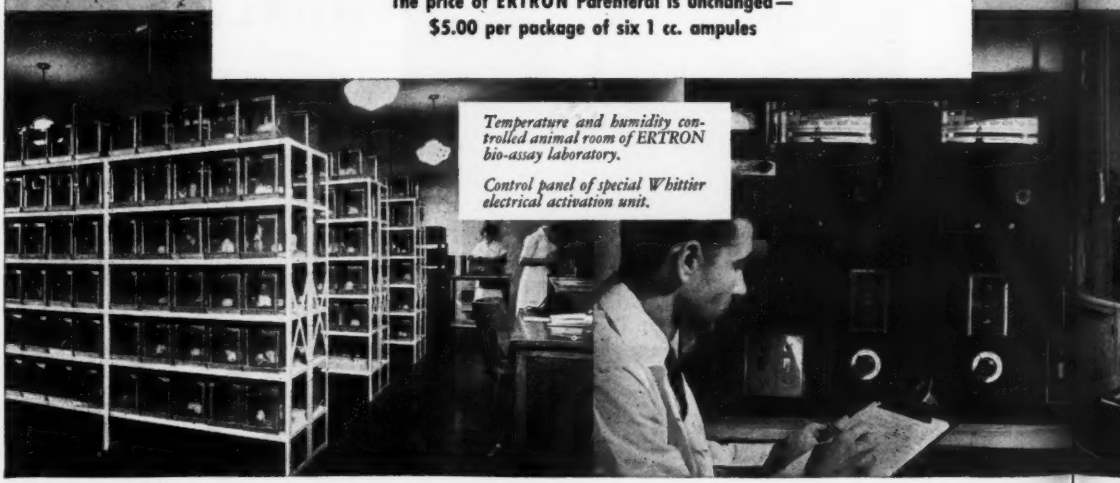

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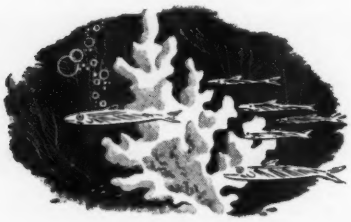

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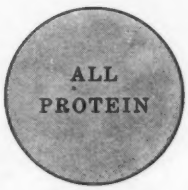

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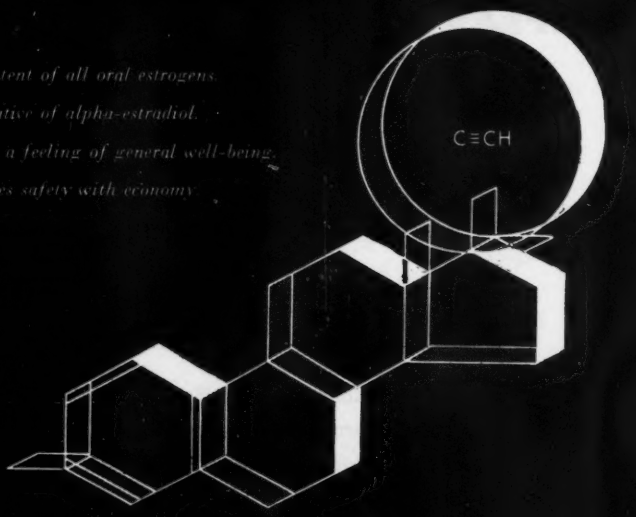

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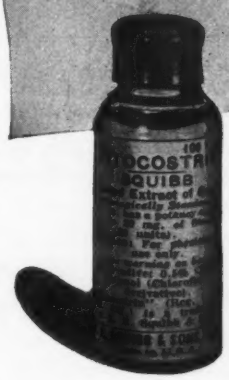

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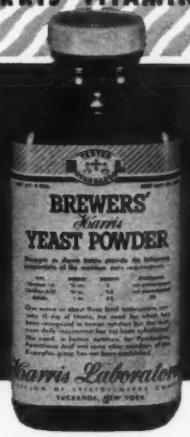

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[1]Lewis, Howard B.: Proteins in Nutrition, J.A.M.A. 120:198, 1942.
[2]Wilder, Russell M., and Keys, Thomas E.: Unusual Foods of High Nutritive Value, J.A.M.A., 120:529 1942.

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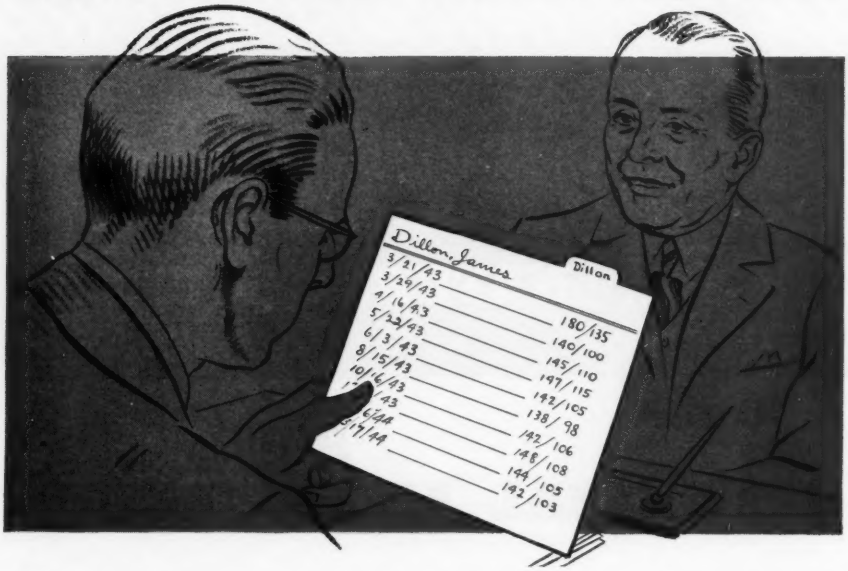

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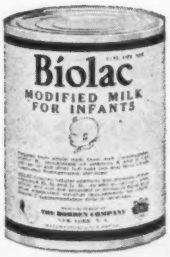


NO LACK IN

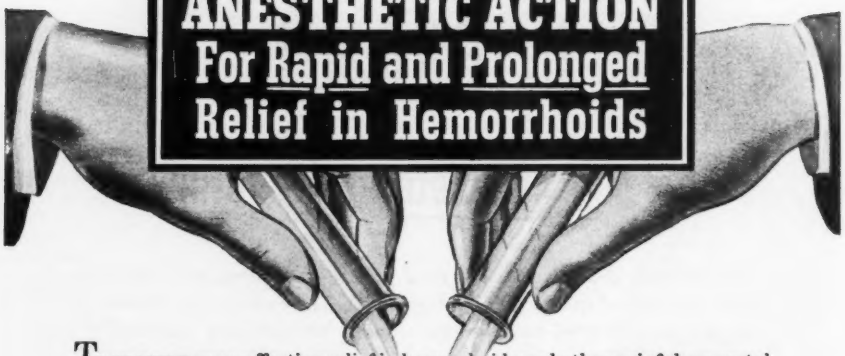
BIOLAC

Borden's complete infant formula

ACCEPTED AMERICAN MEDICAL ASSN.

Biolac is prepared from whole milk, skim milk, lactose, vitamin B_1, concentrate of vitamins A and D from cod liver oil, and ferric citrate. Evaporated, homogenized, sterilized.

Blended ANESTHETIC ACTION For Rapid and Prolonged Relief in Hemorrhoids



To PROVIDE more effective relief in hemorrhoids and other painful anorectal conditions, *two* topical anesthetics are incorporated in Diothoid Suppositories.

One of these is *rapid* in action and transient in effect—the other, slowly absorbed and *prolonged* in effect. Because of this *blended* anesthetic action, Diothoid Suppositories relieve pain quickly and keep the patient comfortable over a long period of time.

DIOTHOID

BRAND
Anesthetic and Antiseptic

SUPPOSITORIES

SPECIAL HYDROPHILIC BASE. The Diothoid base, an exclusive Merrell development, causes the suppository to swell by absorption of water and conform to the shape of the lower rectum. Being miscible with mucous and serous secretions, it forms a self-emulsified ointment that remains in intimate contact with surrounding parts. There is no leakage from the anus.

OTHER ADVANTAGES. Healing of local anal lesions is encouraged by urea contained in Diothoid Suppositories. They are antiseptic, decongestive, free from narcotics, and correctly designed for easy insertion.

FORMULA

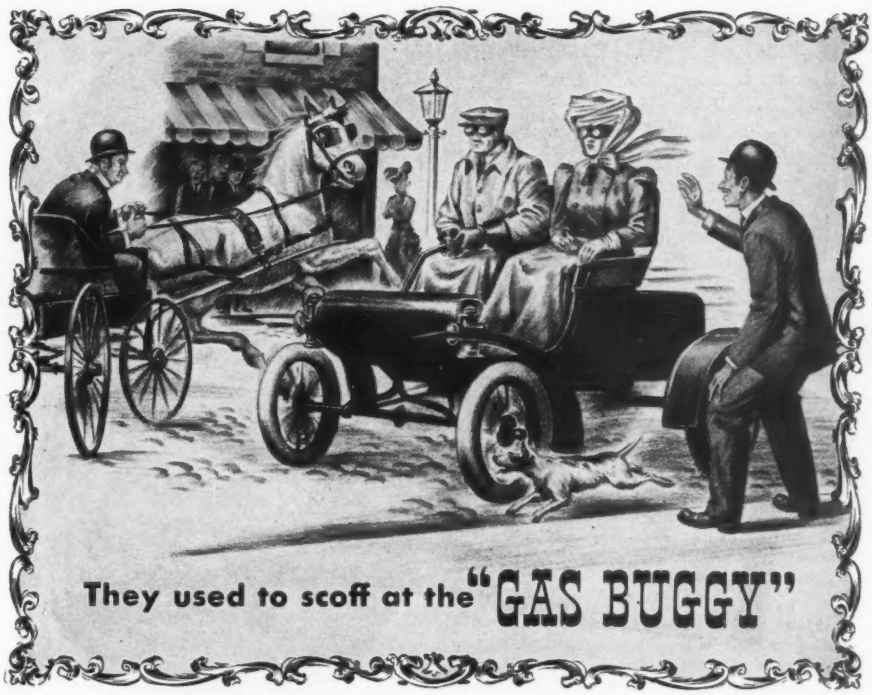
Piperidinopropanediol diphenylurethane (Diothane brand)	1.0%
Isobutyl para-aminobenzoate	1.0%
Urea	10.0%
Ephedrine hydrochloride	1/16 gr.
Oxyquinoline benzoate	1:1000

Diothoid Suppositories are available at prescription pharmacies in boxes of 12

Trade Marks "Diothoid" and "Diothane" Reg. U. S. Pat. Off.

MERRELL
118th Year

THE WM. S. MERRELL COMPANY · CINCINNATI, U. S. A.



Remember the days when people laughed at the "gas buggy"...how they would sing out "get a horse" when the horseless carriage rode by? A rarity once, it's an accepted necessity today.

There were days, too, when people avoided MARGARINE. But that was yesterday. MARGARINE'S present uniform vitamin A fortification, its nutritious American fats which provide the important unsaturated fatty acids, plus its increased palatability, sweetness, freshness and...ease of digestibility...have made it an outstanding nutritious spread and cooking fat.

Prejudice against MARGARINE is as ridiculous as would be a prejudice against the modern automobile, for this energy-producing food is part of the seven basic food groups which authorities state are needed for good nutrition.

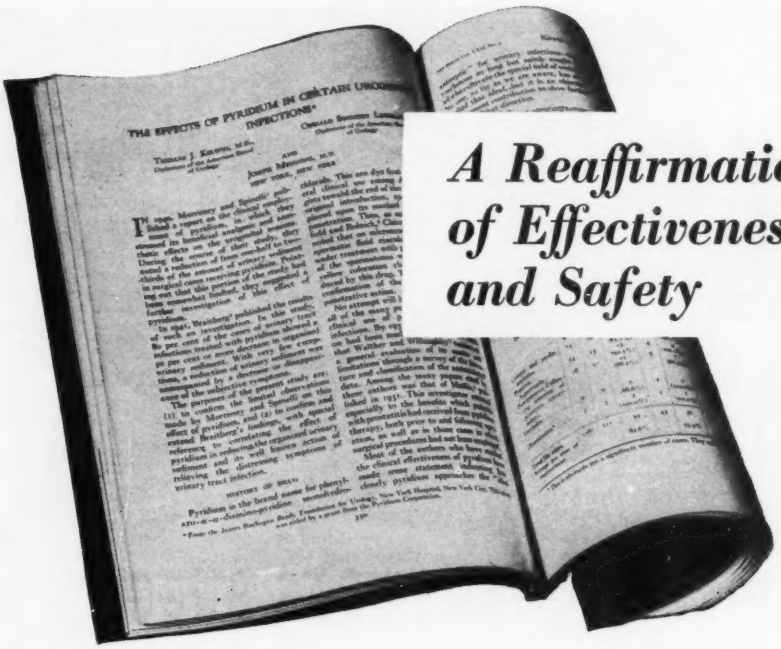
NATIONAL ASSOCIATION OF MARGARINE MANUFACTURERS
MUNSEY BUILDING WASHINGTON, D. C.

1 pound of MARGARINE provides wholesome, easily digested vegetable oils and meat fats of American origin together with a minimum of 9,000 I. U. of vitamin A. Each batch undergoes an average of ten tests for purity and stability.

Dept. 8

PROFESSIONAL SERVICE DIVISION,
NATIONAL ASSOCIATION OF MARGARINE MANUFACTURERS,
MUNSEY BUILDING, WASHINGTON 4, D. C.
Kindly forward a complimentary copy of "Fats in the Wartime Diet."

Name_____
Street_____
City_____ State_____



A Reaffirmation of Effectiveness and Safety

THE recent careful study conducted by Kirwin, Lowsley, and Menning, of the James Buchanan Brady Foundation for Urology, New York Hospital, and published in the December 1943 issue of *The American Journal of Surgery*, reaffirms the many previously published reports emphasizing the clinical effectiveness and complete safety of Pyridium in the symptomatic treatment of common urogenital infections.

In this study of 118 cases of common urogenital infections, routine Pyridium therapy administered for a period of two weeks produced relief of the distressing symptoms in the following percentage of cases: Pain on urination was alleviated or abolished in 95.3 per cent of the cases; burning on urination was relieved in 93.6 per cent of the cases; frequency was greatly reduced or abolished in 85 per cent of the cases; and nocturia was reduced or eliminated in 83.7 per cent of the cases.

The prompt and effective symptomatic relief provided by Pyridium is extremely gratifying to the patient suffering with distressing urinary symptoms. Gratifying also is the confidence in the physician and his therapy which is so evident among patients who are treated with Pyridium.

More than a decade of service in urogenital infections

PYRIDIUM

(Phenylazo-alpha-alpha-diamino-pyridine mono-hydrochloride)

Pyridium is the United States Registered Trade-Mark of the Product Manufactured by the Pyridium Corporation

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

Multiple action in the control of URINARY INFECTIONS

The physician who has experienced the occasional ineffectiveness of a trusted urinary antiseptic will readily appreciate a distinctive advantage of Mandelamine—multiple action.

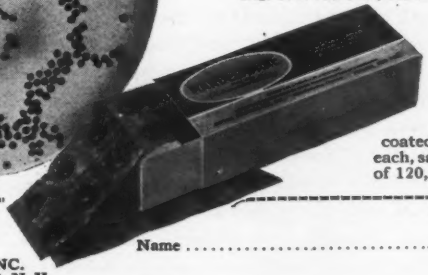
Organisms resistant to either mandelic acid or methenamine often yield to the combined bactericidal effect achieved through the chemical combination of these proved urinary antiseptics in Mandelamine.

Mandelamine needs no supplementary medication, dietary regulation, or control of fluid intake. Mandelamine's toxic index is especially low. Excepting renal insufficiency, no contraindications have been noted.

Mandelamine combines safety with effectiveness in the treatment of pyelonephritis, cystitis, prostatitis, the infection accompanying renal calculi, and neurogenic bladder. Freedom from accessory effects makes Mandelamine especially suitable for pyelitis of pregnancy, and for children.

MANDELAMINE

Reg. U. S. Pat. Off. (Methenamine Mandelate)



Supplied in enteric coated tablets of 0.25 Gm. each, sanitaped, in packages of 120, 500 and 1000.

NEPERA CHEMICAL CO. INC.
21 Gray Oaks Avenue, Yonkers 2, N. Y.

Please send me literature and a physician's sample of Mandelamine.

Name .....M.D

Street .....

City .....State .....

NEPERA CHEMICAL CO. INC.

Manufacturing Chemists YONKERS 2, New York

'WELLCOME' **GLOBIN INSULIN** WITH ZINC

The diabetic's insulin requirements are not static but change as the patient goes through the day. 'Wellcome' Globin Insulin with Zinc is timed to conform to the patient's needs, providing rapid onset of action at the start of the day, a continuing effect to meet the peak demands of afternoon and early evening, and a waning of action at night when requirements diminish. Because of this unique type of action, a single injection daily will control many moderately severe and severe cases of diabetes. Nocturnal insulin reactions are rarely encountered. Globin Insulin is comparable to regular insulin in its freedom from allergenic skin reactions. 'Wellcome' Globin Insulin with Zinc, an important advance in diabetic control, was developed in the Wellcome Research Laboratories, Tuckahoe, New York. U. S. Pat. No. 2,161,198.

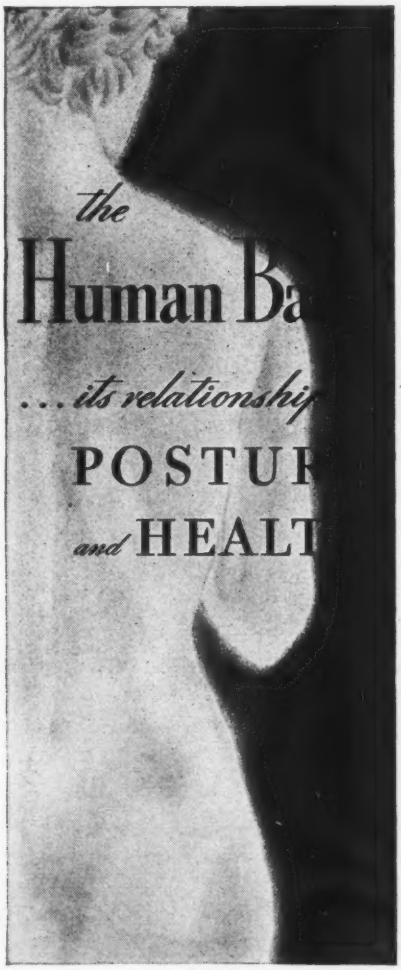
Vials of 10 cc. 80 units in 1 cc.

ACCEPTED AMERICAN MEDICAL ASSN

Literature on request

'Wellcome' Trademark Registered

BURROUGHS WELLCOME & CO. (U.S.A.) INC. **9-11 E. 41 St., New York 17, N. Y.**



May we send you this helpful new booklet FREE *for presentation to your patients?*

Last year the Samuel Higby Camp Institute for Better Posture, in collaboration with eminent authorities, prepared a little booklet "Blue Prints for Body Balance" which has been supplied to thousands of physicians, free, at their request. Now we have prepared a new companion booklet which is just off the press.

This additional sixteen-page booklet, "The Human Back . . . Its Relationship to Posture and Health," tells its story in simple, non-technical language, and is attractively illustrated. It is educational, non-commercial, informative . . . an ethical booklet for physicians to give their patients. We believe it will inspire its readers to a better appreciation of the importance of good posture and professional medical counsel.

We shall be glad to send you as many copies as you wish, free. The booklet measures 3½ by 6½ inches, and is attractively printed in color. Just use the coupon below, or write on your professional letterhead to the

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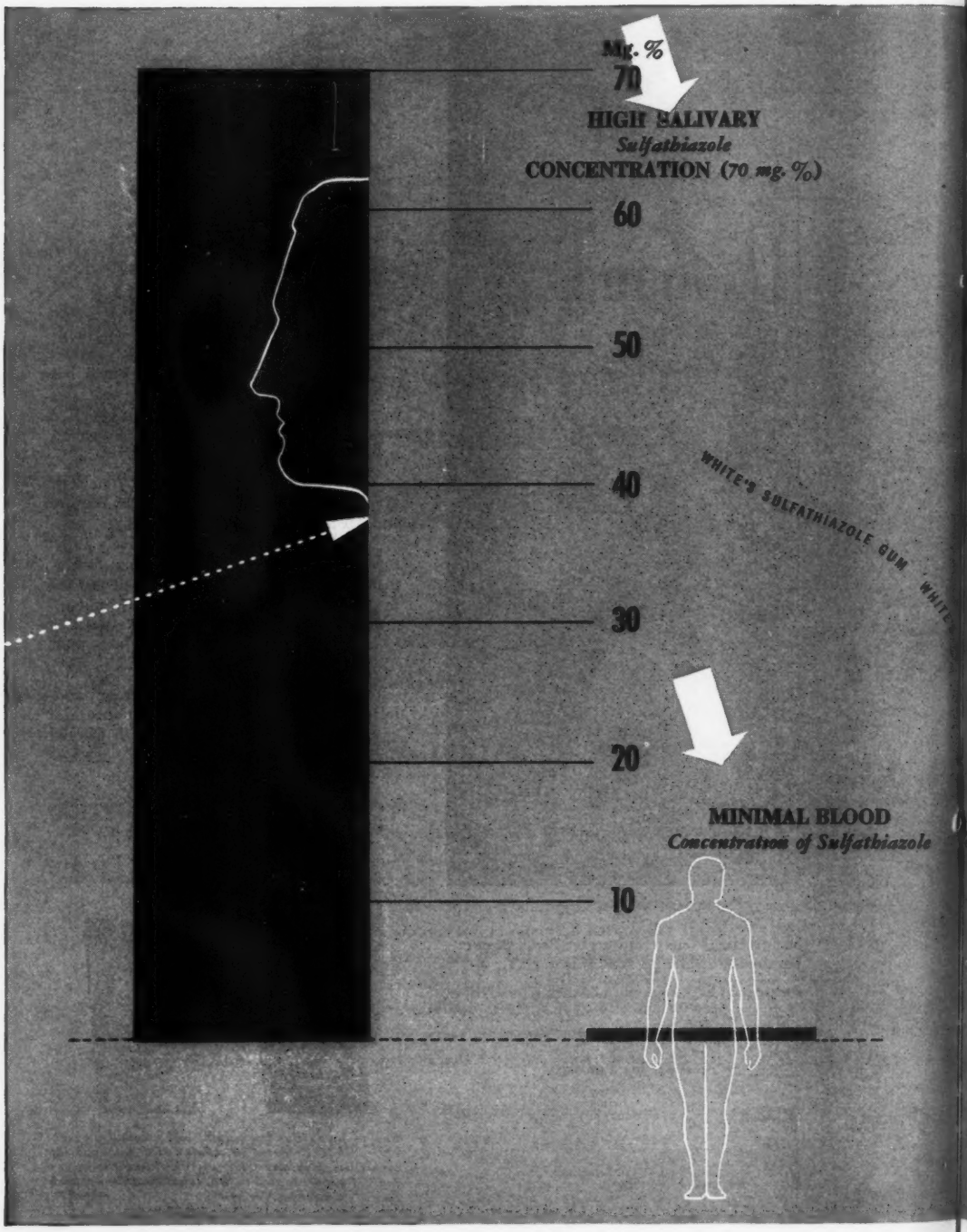
How many of these two helpful booklets shall we send you—FREE? Prepared in collaboration with eminent authorities, both give vital information on the importance of posture to good health. Insert quantities of each desired on order form to left.


Mg. %
70
HIGH SALIVARY
Sulfathiazole
CONCENTRATION (70 mg. %)
60
50
40
WHITE'S SULFATHIAZOLE GUM
30
20
MINIMAL BLOOD
Concentration of Sulfathiazole
10

Throat Chemotherapy without Systemic Toxicity

White's Sulfathiazole Gum provides a high and very *prolonged* salivary concentration of *locally active* sulfathiazole throughout the whole oropharyngeal area—with almost negligible elevation of the blood level.

One tablet, chewed for one-half to one hour, promptly initiates a high salivary concentration of dissolved sulfathiazole—and *maintains* throughout a full hour's chewing period, an average concentration of 70 mg. per cent.

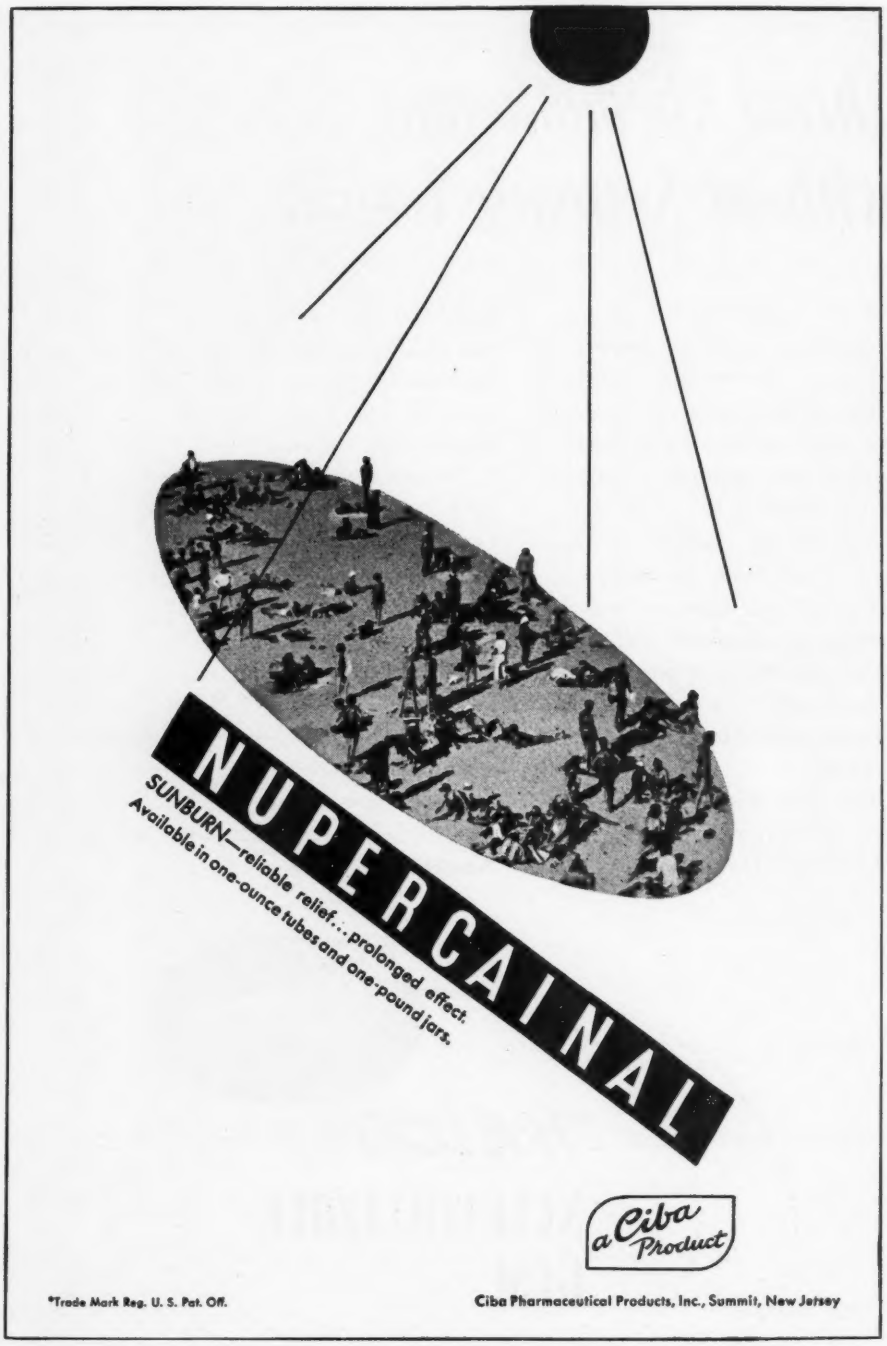
Yet even with *maximal* dosage, and even in children, resultant blood levels are not even quantitatively measurable for the most part and at no time exceed 1 mg. per cent. Freedom from the likelihood of systemic toxicity is obvious.

Valuable in the treatment of such conditions as septic sore throat, peritonsillitis, pharyngitis, tonsillitis, infectious gingivitis. Widely prescribed—ethically promoted, of course.

White's Sulfathiazole Gum is supplied in packages of 24 sanitaped tablets, in slip-sleeve prescription boxes—on prescription only. White Laboratories, Inc., Pharmaceutical Manufacturers, Newark 7, N. J.

WHITE'S SULFATHIAZOLE GUM WHITE'S SULFATHIAZOLE GUM

White's
SULFATHIAZOLE
GUM


NUPERCAINAL
SUNBURN—reliable relief... prolonged effect.
Available in one-ounce tubes and one-pound jars.
a Ciba Product
*Trade Mark Reg. U. S. Pat. Off.
Ciba Pharmaceutical Products, Inc., Summit, New Jersey

Good appetite is a precious thing. All healthy babies are born with one, and it must be preserved and cultivated by good care and proper foods.

'Dexin', a high dextrin carbohydrate food for infant feeding, is not oversweet and will not dull a good appetite—a major consideration for any baby's well being. The addition of other bland foods to the diet is more easily accomplished.

The high dextrin content of 'Dexin' promotes (1) the formation of soft, flocculent, easily digested curds, and (2) diminishes intestinal fermentation and the tendency to colic and diarrhea. 'Dexin' is readily soluble in hot or cold milk.

'Dexin' reg U. S. Patent Office

'Dexin' does make a difference

'DEXIN'

HIGH DEXTRIN CARBOHYDRATE

COMPOSITION

Dextrins	75%	Mineral Ash	0.25%
Maltose	24%	Moisture	0.75%
Available carbohydrate	99%	115 calories per ounce	

6 level packed tablespoonfuls equal 1 ounce

Literature on request

BURROUGHS WELLCOME & CO. (U.S.A.) INC. 9-11 East 41st Street, New York 17, N. Y.

RAPID HEALING is particularly good news these crowded days to doctor as well as patient.

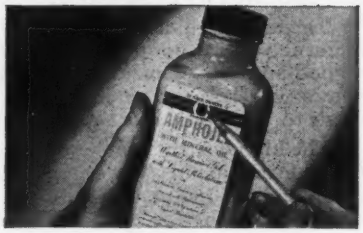
After ten days of Amphojel treatment (with, of course, an appropriate regime of diet and rest), x-ray re-examination often reveals complete disappearance of the peptic ulcer niche.*

In addition to promoting rapid healing of the ulcer, Amphojel offers:

Prompt relief from pain . . . Fewer recurrences . . . Superior weight gain during treatment . . . No alkalosis.

Available in 12 fl. oz. bottles. John Wyeth & Brother, Division WYETH Incorporated, Philadelphia.

*WOLDMAN, E. E., and POLAN, C. G.: The Value of Colloidal Aluminum Hydroxide in the Treatment of Peptic Ulcer; A Review of 407 Consecutive Cases, Am. J. M. Sc. *198:* 155-164 (Aug.) 1939.



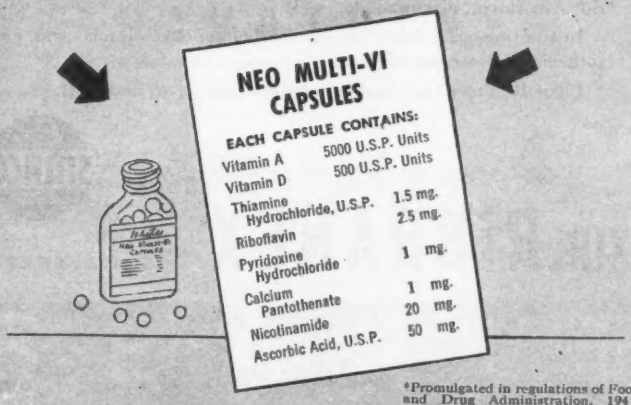
AMPHOJEL
REG. U. S. PAT. OFF.
Wyeth
ALUMINA GEL

White's

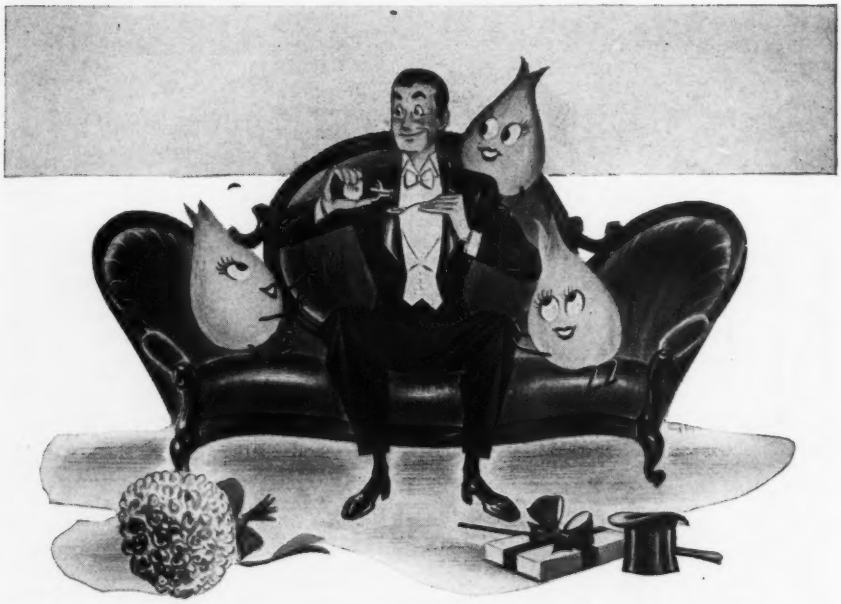
Neo Multi-Vi

CAPSULES

provide, in each capsule, *all* clinically established vitamins in amounts safely above basic adult daily requirements*—yet not wastefully in excess of the average patient's needs. Modest in cost, economical in even prolonged usage. Ethically promoted, of course. White Laboratories, Inc., Pharmaceutical Manufacturers, Newark 7, N. J.



*Promulgated in regulations of Food and Drug Administration, 1941.



HOW TO GET B COMPLEX ON THE RIGHT SIDE OF PAPILLA VALLATA

The pleasing flavor of Elixir Ribranex quickly gets on the right side of the taste buds of your most finicky patient.

Elixir Ribranex tastes delightful, appetizing—is easy to take.

The source of vitamin B complex in Elixir Ribranex is rice bran concentrate—one of the richest *natural* food sources of the entire B complex.

Elixir Ribranex contains, in biologic balance, thiamine hydrochloride, riboflavin, niacin amide.

In addition, such factors as biotin, choline, inositol, folic acid, pantothenic acid are included.

Elixir Ribranex is available in bottles of 8 fl. oz. and 32 fl. oz.

REG. U. S. PAT. OFF.

SMACO

ELIXIR RIBRANEX ... S. M. A. CORPORATION

REG. U. S. PAT. OFF.

DIVISION Wyeth INCORPORATED

PHILADELPHIA

PAVATRINE *in Dysmenorrhea*

The potent uterine spasmolytic action of Pavatrine is such that its ability to relieve dysmenorrhea has been described as "morphine-like."

Yet, Pavatrine is non-narcotic, non-habit forming, devoid of narcotic manifestations.

Pavatrine is both neurotropic and musculotropic in action, thereby combining the clinical advantages of both atropine and papaverine, without appreciably displaying such side effects as vasomotor relaxation, mydriasis or depression of secretions.

If you have not received your clinical trial supply of Pavatrine, write to the Medical Dept., G. D. Searle & Co., P. O. Box 5110-C, Chicago 80, Illinois.

PAVATRINE

(β-diethylaminoethyl fluorene-9-carboxylate-hydrochloride)

Supplied in bottles of 20, 100 and 1000 s.c. tablets, each containing 2 gr. (125 mg.)

G·D·SEARLE & CO.

ETHICAL PHARMACEUTICALS SINCE 1888

CHICAGO

New York Kansas City San Francisco

Pavatrine is the registered trademark of G.D. Searle & Co.

SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

The case for "PREMARIN" in the treatment of menopausal symptoms . . . . . .

- "Premarin" is highly potent; even severe and well-established cases usually show a satisfactory response to treatment.
- Although highly potent, "Premarin" is exceptionally well tolerated; unpleasant side effects are seldom noted.
- "Premarin" is a natural estrogen . . . conjugated estrogens (equine).
- "Premarin" therapy conserves the physician's time; office consultations are kept at minimum.
- When an oral estrogen is employed, such as "Premarin," a gradual physiological adjustment can be effected. By a controlled "tapering-off" process the patient can be accustomed to decreasing estrogen production.
- "Premarin" is accepted by the A.M.A. Council on Pharmacy and Chemistry.

ACCEPTED AMERICAL MEDICAL ASSN.

"PREMARIN"

Reg. U. S. Pat. Off.

TABLETS

CONJUGATED ESTROGENS

(equine)

Ayerst

AYERST, McKENNA & HARRISON LIMITED . . . ROUSES POINT, N. Y. . . . MONTREAL, CANADA

Pioneers of Oral Estrogens

"FIRST WE MUST STOP THAT DIARRHEA!"

(ulcerative colitis)

NATURALLY, any condition as serious as ulcerative colitis calls for its own specific treatment.

The physician finds it necessary, however, to provide immediate relief from diarrhea while specific treatment is being instituted.

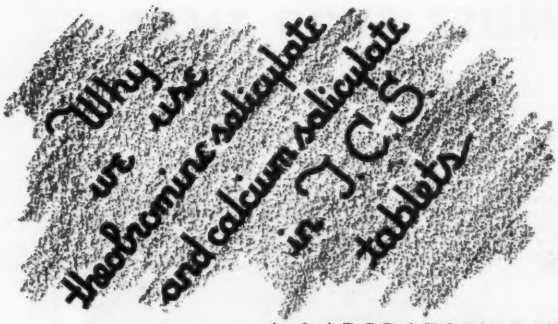
Kaomagma provides quick relief from all diarrheas; consolidates stools safely, checks dangerous fluid loss.

And the dosage is self-limiting to duration of condition, when, after an initial dose of 2 tablespoonfuls, 1 tablespoonful is taken after every bowel movement. In 12 fl. oz. bottles.

A Wyethical of John Wyeth and Brother, Division WYETH Incorporated, Philadelphia.

KAOMAGMA REG. U. S. PAT. OFF. KAOLIN IN ALUMINA GEL *Wyeth* REG. U. S. PAT. OFF.

—for quick relief from diarrhea . . .



A LABORATORY EXPERIMENT

IN THIS experiment an exact duplication of gastric and intestinal environments was attempted in order to determine the percentage of different forms of theobromine dissolved by the hydrochloric acid of the stomach and the percentage of theobromine in a soluble and absorbable state after passing through the acidity of the stomach and the mild alkalinity of the small intestine. Fifteen minutes was decided upon as the average time the theobromine tablet would remain in the stomach before passing into the small intestine and .1N. HCL (pH 1.4) as the average stomach acidity it would encounter. The mixture was slowly agitated during the fifteen minutes. To duplicate the intestinal conditions this synthetic gastric mixture was slowly alkalinized with sodium bicarbonate to pH 7.3 and slowly agitated for two hours. pH 7.3 was selected as the average pH of the small intestine and two hours as the average time required for the theobromine to progress far enough down the small intestine for most of the absorption of the theobromine into the body to have occurred. The percentage of each form of theobromine dissolved after the gastric environment and after the gastro-intestinal environments was determined by filtering the mixtures and assaying the theobromine in the filtrates.

LOWER GASTRIC SOLUBILITY INDICATES BETTER TOLERANCE. HIGHER INTESTINAL SOLUBILITY INDICATES SUPERIOR ABSORPTION AND EFFICIENCY.	Form of theobromine tested	Indicated Gastric Solubility Percentage theobromine dissolved after 15 minutes in .1N. HCL—pH 1.4	Indicated Intestinal Solubility Percentage theobromine dissolved after 15 minutes in pH 1.4, followed by 2 hours in pH 7.3
	TCS (Theobromine Salicylate / Calcium Salicylate)	26.86%	86.92%
	Theobromine (alkaloid)	29.07%	45.43%
	Theobromine—Sodium Salicylate (Diuretin)	31.57%	78.23%
	Theobromine and Sodium Acetate	34.56%	53.99%

TCS

EACH TABLET CONTAINS

Theobromine Salicylate.....Grs. 6
Calcium Salicylate.....Gr. 1
Phenobarbital.....Gr. ¼

TCS Tablets are issued in bottles of 50 and 250 tablets each

INDICATIONS and DOSAGE

Hypertension, Angina Pectoris: One tablet, 3 or 4 times a day. Reduce dosage with improvement

Myocardial insufficiency, cardiac edema, acute cardiac conditions: Two to three tablets, 3 or 4 times a day. Reduce dosage with improvement

WILLIAM R. Poythress & CO., INC.
RICHMOND VIRGINIA

Nitrogen—Essential Growth Factor

Vital nitrogen—absorbed by plants from air and soil—is naturally available to man only from dietary proteins digested to amino acids.

Parenamine—containing all amino acids essential to animal growth—restores favorable nitrogen balance when dietary protein intake is inadequate.

Parenamine
Amino Acids Stearns

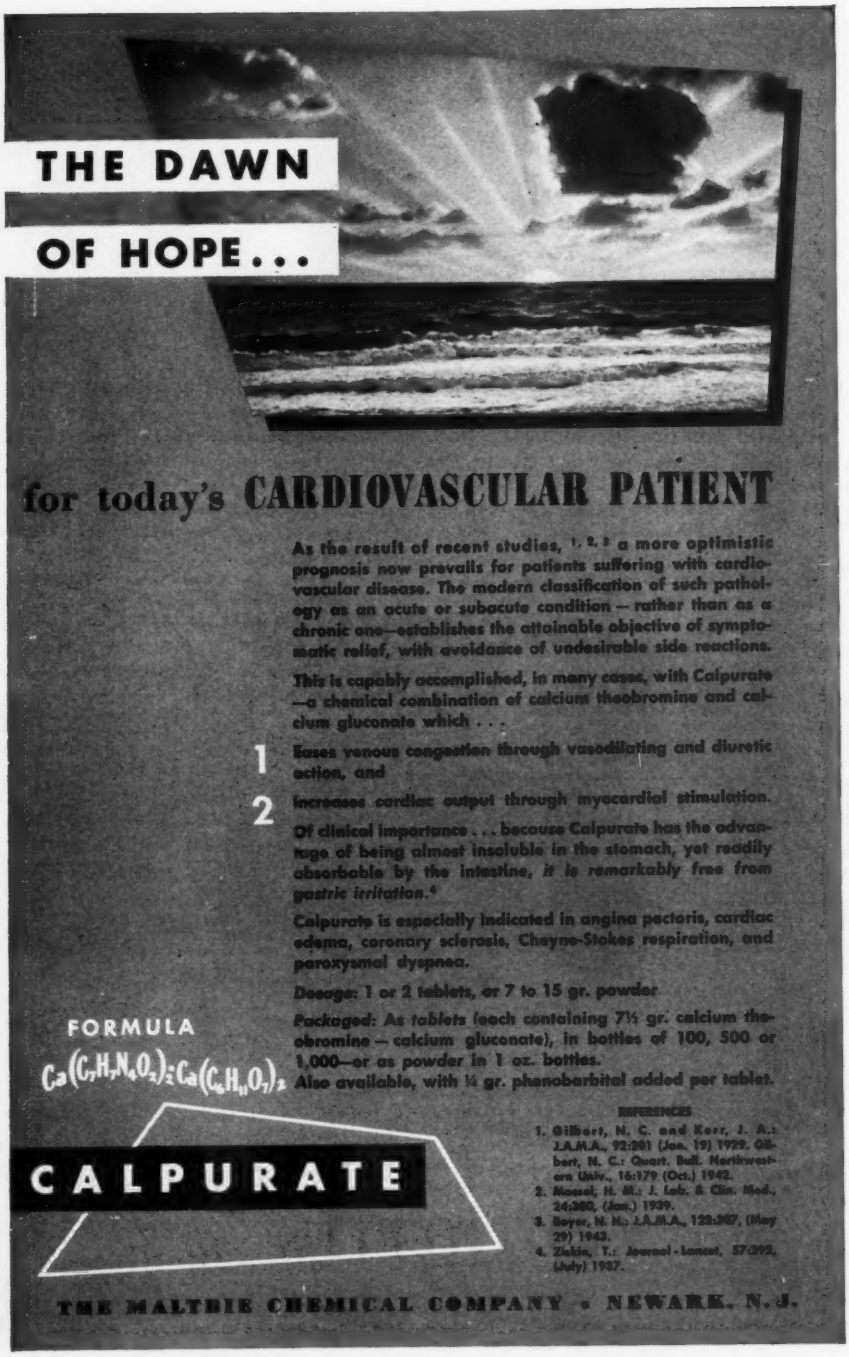
Available for parenteral and oral administration as a 15% solution in 100 cc. rubber-capped vials. Details of therapy available on request.

Trade Mark Parenamine *Reg. U. S. Pat. Office*

Frederick Stearns & Company

DETROIT 31, MICHIGAN

NEW YORK KANSAS CITY SAN FRANCISCO WINDSOR, ONTARIO SYDNEY, AUSTRALIA AUCKLAND, NEW ZEALAND


THE DAWN
OF HOPE...
for today's CARDIOVASCULAR PATIENT
As the result of recent studies, [1, 2, 3] a more optimistic prognosis now prevails for patients suffering with cardiovascular disease. The modern classification of such pathology as an acute or subacute condition — rather than as a chronic one—establishes the attainable objective of symptomatic relief, with avoidance of undesirable side reactions.
This is capably accomplished, in many cases, with Calpurate —a chemical combination of calcium theobromine and calcium gluconate which . . .
1 Eases venous congestion through vasodilating and diuretic action, and
2 Increases cardiac output through myocardial stimulation.
Of clinical importance . . . because Calpurate has the advantage of being almost insoluble in the stomach, yet readily absorbable by the intestine, it is remarkably free from gastric irritation.[4]
Calpurate is especially indicated in angina pectoris, cardiac edema, coronary sclerosis, Cheyne-Stokes respiration, and paroxysmal dyspnea.
Dosage: 1 or 2 tablets, or 7 to 15 gr. powder
Packaged: As tablets (each containing 7½ gr. calcium theobromine — calcium gluconate), in bottles of 100, 500 or 1,000—or as powder in 1 oz. bottles.
Also available, with ¼ gr. phenobarbital added per tablet.
FORMULA
$C_{28}(C_7H_7N_4O_2)_2Ca(C_6H_{11}O_7)_2$
REFERENCES
1. Gilbert, N. C. and Kerr, J. A.: J.A.M.A., 92:201 (Jan. 19) 1929. Gilbert, N. C.: Quart. Bull. Northwestern Univ., 16:179 (Oct.) 1942.
2. Massel, H. M.: J. Lab. & Clin. Med., 24:380, (Jan.) 1939.
3. Boyer, N. H.: J.A.M.A., 122:307, (May 29) 1943.
4. Zinkin, T.: Journal-Lancet, 57:392, (July) 1937.
CALPURATE
THE MALTBIE CHEMICAL COMPANY • NEWARK, N. J.

- Dysmenorrhea
- Premenstrual Tension
- Functional Uterine Bleeding
- Habitual and Threatened Abortion

The therapeutic efficacy of the corpus luteum hormone in dysmenorrhea, premenstrual tension, functional uterine bleeding, and spontaneous abortion has been attested by a wealth of clinical observation. In many cases, luteal therapy represents a direct attack on the underlying cause of the disorder—a deficiency of the corpus luteum hormone—which explains the commonly observed beneficial results. By prescribing Progestoral 'Roche-Organon' (pregneninolone), the orally effective form of the luteal hormone, the physician can assure his patient of the full benefits of potent luteal therapy without the inconvenience of frequent injections. When parenteral therapy is required, the use of Progestin 'Roche-Organon' (progesterone) affords optimum results. Write for descriptive literature.

Roche-Organon, Inc., Nutley 10, N. J.

In Respiratory Emergencies

LOBELIN-BISCHOFF

Clinical evidence[1] gathered recently has demonstrated that Lobelin-Bischoff is useful in many respiratory emergencies.

Its value already proven in Asphyxia Neonatorum[2] [3], this preparation has proved effective in anesthetic accidents and in cases of respiratory failure due to traumatic shock.[1]

Lobelin-Bischoff, brand of alpha-lobeline hydrochloride, is not to be confused with other lobelin preparations. We have isolated only the fraction which acts upon the respiratory center and which produces no untoward effects.

Packed in ampules of 1 cc. (1/20 grain) for infants; ampules of 1 cc. (3/20 grain) for adults. Boxes of 6, 12, 50 and 100 ampules

Literature and Reprints on request.

[1] Forman: Am. J. of Surgery, May 1943. [2] Gorrell: Clinical Medicine, Oct. 1943.
[3] Zahorsky: Synopsis of Pediatrics, 4th Edition, C.V. Mosby Company, St. Louis, 1943.

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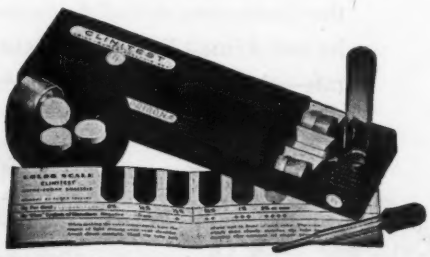

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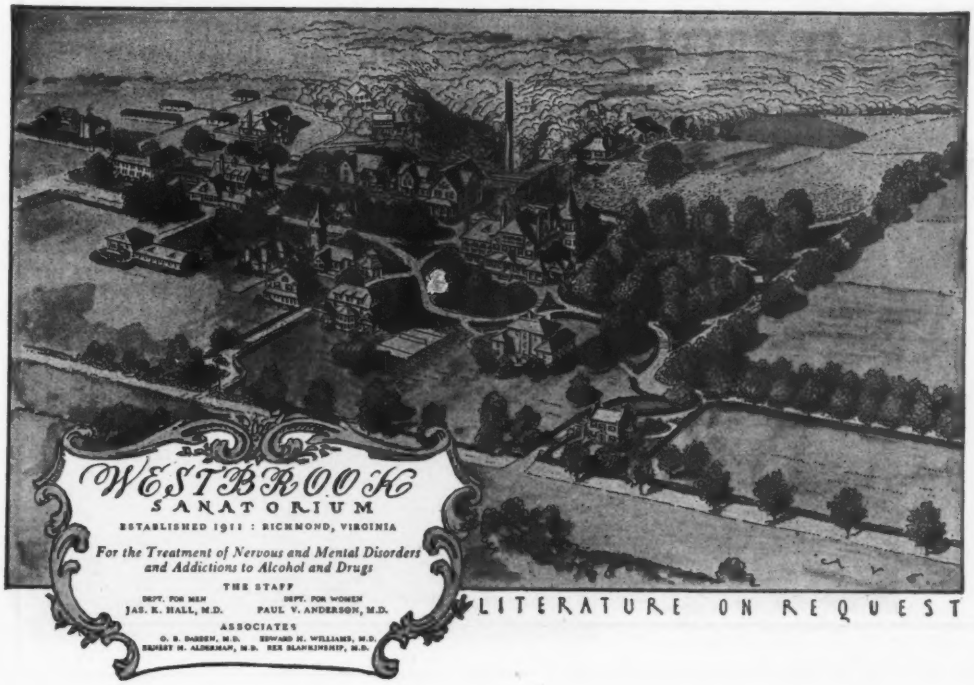
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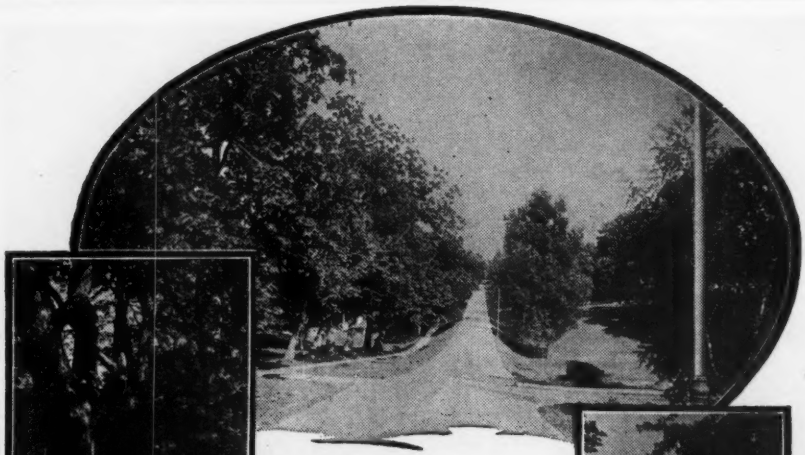

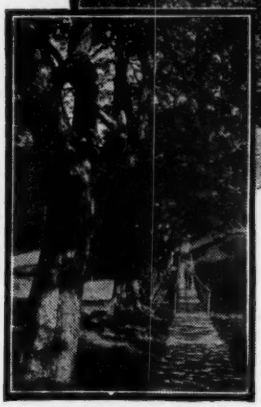

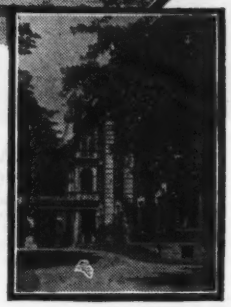

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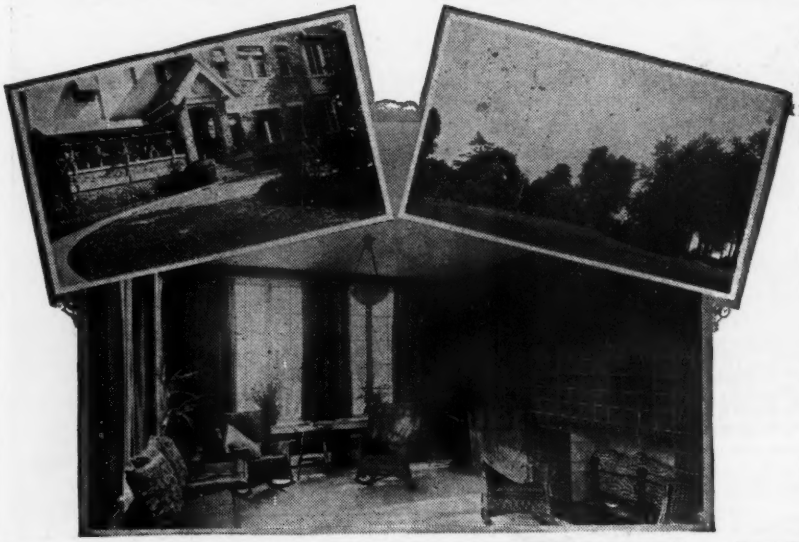

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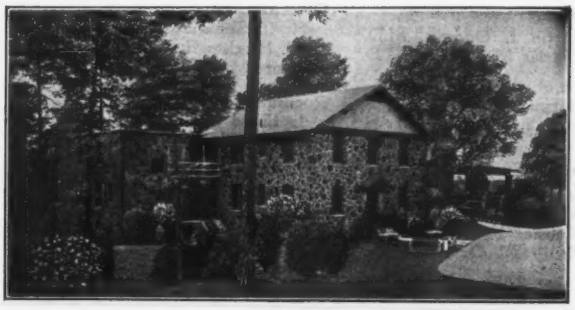

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*Drs. Frederick H. Falls, George H. Rezek and S. T. Benensohn, Surgery, Gynecology and Obstetrics, September, 1942, Vol. 75, pp. 289–299.

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Volume 37 MAY 1944 Number 5

POSTHEPATITIS SYNDROME*

By CHARLES M. CARAVATI, M.D.†
Richmond, Virginia

Since the epidemic of jaundice in the U. S. Armed Forces in 1942, we have seen a sizable group of officers and enlisted men who, as an apparent sequel of this disease, show a clinical syndrome, the exact nature of which is poorly understood. This is designated "posthepatitis syndrome." The term "hepatitis" as used in this discourse refers to the disease commonly known as catarrhal or infectious jaundice, whether the disease follows contact with an infected source[1] or is acquired by parenteral means, such as the administration of serum, blood,[2] or vaccines. Neither the icterogenic agent, or the pathology of the jaundice, is well understood.[3,4] In the post-vaccinal cases in the U. S. Army, icterus occurred most often in from 40 to 100 days after the administration of yellow fever vaccine. This was also the experience in Europe with convalescent serum administered for the prevention of measles and convalescent plasma for mumps.[5]

Complete hepatic recovery with no residual histological change is the rule, except in the fatal cases.[6,7] Recently Roholm and Iverson,[8] in performing aspiration biopsies of the liver in cases of catarrhal jaundice, have found that during the acute process there is a general disarrangement of the hepatic cells with necrosis (necrobiotic changes), infiltration with mononuclear cells and increase of connective tissue in the portal spaces around the central veins and also in the lobules. However, when repeat biopsies were performed four weeks after the appearance of jaundice, they found no evidence of significant histological change in the livers examined. In twenty cases in which autopsy has been performed and the tissue examined by the Army Medical Museum,[9] on soldiers who have had post-vaccinal hepatitis and who have died from other causes weeks or months later, there has been no incidence reported of any liver damage.

Regardless of these apparent conclusive findings, there are a group of soldiers who present a rather characteristic subjective syndrome, and who demonstrate a common sensory pattern and the purpose of this report is to record the findings of our studies to determine the possible etiology of this syndrome. This work was carried on at Percy Jones General Hospital, Battle Creek, Michigan.

The outstanding subjective symptoms are:

(1) Fatigue
(2) Right upper quadrant discomfort
(3) Digestive disturbances, particularly fat intolerance
(4) Malnutrition
(5) Emotional instability

While characteristically most of the cases complain of subjective symptoms while they are convalescent from the jaundice, others apparently recover, before the chain of abnormal physiological phenomena develop.

Cholemia in itself is not the responsible factor, as several of our cases have had only moderate icterus which persisted for a short time and these have presented as profound symptoms as others who have experienced deep and prolonged jaundice.

Case Report.—Capt. W. B. C., M.C., aged 30, formerly a practicing physician, enlisted in the Army in March, 1941. His past history was non-contributory. He was on active medical duty in an Army post. Yellow fever vaccine was administered in March, 1942. He developed a mild icterus beginning in June, which continued for four weeks, the index never exceeding 20. He was afebrile, and was confined in the hospital for four weeks. Coincident with the jaundice, he experienced a localized pain directly under the right costal margin and it has remained

*Read in Section on Gastroenterology, Southern Medical Association, Thirty-Seventh Annual Meeting, Cincinnati, Ohio, November 16-18, 1943.

†Lieutenant-Colonel, Medical Corps, U. S. Army; Chief of Medical Service, Percy Jones General Hospital, Battle Creek, Michigan.

until this time. The pain was always worse after effort. Shortly after the disappearance of icterus, fatigue became prominent and an epigastric fulness occurred. He was able to perform part duty after a period of rest, but the symptoms became more pronounced and he was forced again to return to the hospital. He had a total weight loss of 40 pounds and has never been able to regain any of this.

Careful examination on several occasions, and again recently, has never shown any significant findings. His liver is not palpable. Hypermotility of the distal ileum was demonstrated on small bowel study. However, there has been no diarrhea. He has shown a consistently flat glucose tolerance curve, which has persisted even after the administration of a low carbohydrate, high protein and high fat diet. Duodenal drainage was normal. Liver function test, including total protein and albumin-globulin ratio, prothrombin, hippuric acid, galactose tolerance, cholesterol and cholesterol esters, van den Bergh, serum phosphatase and cephalin flocculation, were all negative. Pancreatic studies, after the administration of mecholyl, showed abundance of fat-splitting lipase. Quantitative study of 24-hour fecal fat showed it to be within the normal zone.

This officer presents definite evidence of a psychoneurosis with a conversion phenomenon and relates all of his complaints to a "badly damaged liver" which he is convinced is present.

Previous to the jaundice this officer is reported to have been a satisfactory officer in all details. Before entering the service he was a polo player and participated in many other active sports, and there is no history of any functional instability which can be established in his past story. Minimal cholemia, with maximum disability, marked weight loss and definite evidence of a conversion type of psychoneurosis are outstanding.

FATIGUE

Characteristically all cases have presented the clinical picture of chronic and unexplained exhaustion. Each soldier has been unable adequately to meet even minimal routine daily demands. All have been hospitalized over long periods with no appreciable relief. They require 12 to 16 hours rest daily, but even after periods of practical mental and physical inactivity, the abnormal tired state persists. Evidence is inadequate to conclude that organic pathology is responsible for the perpetuation of this pernicious inertia.

Case Reports.—Lt. Col. L. B., D.C., aged 46, past history irrelevant, had yellow fever vaccine in February, 1942, and jaundice in June, 1942, which continued four weeks. The height of icterus was 50. Convalescence was slow due to exhaustion, right upper quadrant pain and fat intolerance. Now, one year later, he is unable to work due to continuance of these symptoms. He has improved under conservative management and will return to duty.

The patient is well nourished; there are no significant abnormal physical findings. Roentgen studies of the chest, stomach, small and large bowel, and gallbladder were normal. All functional studies of the liver were found in the normal zone. He had a consistently low fasting blood sugar, but a normal dextrose tolerance curve. Large doses of atropine were administered with no effect on the fatigue (Portis).[10] Fat intolerance continues. Neuropsychiatric evaluation reveals normal findings. There is no history of past or present emotionality.

Cpl. R. M., colored, aged 39, had never previously been ill. After 15 months' service he had jaundice 40 days after yellow fever vaccine. He was in the hospital four weeks, then returned to duty. During field work, two months later, he became weak and nervous and fell out. One month later fleeting skeletal pains occurred, particularly in the arms and legs, and tender heels. He became nervous, and unstable, and insomnia developed. He was tired after manual exertion. After hospitalization for nine months his symptoms continue.

He had internal hemorrhoids, with bleeding, Grade 2, and rectal polypi, Grade 1. All joints were normal. All laboratory examinations were normal except increased resistance of red blood cells to hypotonic saline. Neuropsychiatric study showed psychoneurosis with hypochondriasis, Grade 2.

Formerly a sturdy, well developed, well composed negro soldier, is now incapacitated on account of evident psychosomatic manifestations following moderate post-vaccinal hepatitis.

RIGHT UPPER QUADRANT DISCOMFORT

Most patients have complained of a mild but constant aching localized beneath the right costal margin. It is seldom transmitted and is not aggravated by deep breathing or by the intake of food, but is accentuated by physical effort. There is usually a lessening of the sensory disturbance upon assuming the supine position. No history of colic has been obtained. There has been questionable tenderness, but no other significant finding. No relief has been obtained by application of abdominal binders. One patient showed a fixed diaphragm on the right, with no history of antecedent chest disease, which we felt may have represented an adhesion of Glisson's capsule to the liver. This was not found in any other case, though each was fluoroscoped for this possibility, and therefore this finding probably represented an old adhesive pleuritis.

Case Reports.—Pfc. E. U., aged 27, had severe jaundice in April, 1942, 90 days after yellow fever vaccine. After hospitalization he began to feel tremulous, unsteady, had almost constant headaches, steady and intractable fatigue. He had intolerance to fats and many foods, but particularly a constant dull aching and soreness in the right upper quadrant with tenderness, made worse on deep breathing. This has continued for 15 months.

Metabolic, chemical, functional and physical findings were all negative with the exception of limitation of motion of the right diaphragm and tenderness under the right costal arch.

He was discharged from service with a diagnosis of psychoneurosis.

Pvt. R. M., aged 29, had mild jaundice in June, 1942, after yellow fever vaccine in February of that year. He was not hospitalized. Beginning 60 days after recovery he experienced gradual progression of inertia. Fat intolerance was marked. There were occasional attacks of nausea and vomiting.

He had a persistently palpable liver, moderately tender, but no other evidence of structural or functional liver disease. His basal metabolic rate was —12 to —20. There were target cells in the peripheral blood. Increased resistance to hypotonic salt, fragility beginning at 0.42 and being complete at 0.25 per cent. He had a past history of chronic flatulent indigestion for years, never pain. He had never previously consulted a physician. He was totally unfit for any type of service.

FAT INTOLERANCE

Flatulent dyspepsia, particularly after the oral consumption of fats, has been a constant subjective complaint. Consistently, these soldiers have experienced pyrosis, epigastric fulness, burning and flatulence, after taking fats, even though the high fat content of the diet has been camouflaged at times to eliminate the psychological factor. This has been partially alleviated in some cases by the use of atropine in moderately large doses.

It has been our experience that soldiers suffering with functional dyspepsia consistently manifest a low tolerance for fats. This class more commonly complains of distress after the oral consumption of fats than a similar class who are suffering from known biliary tract disease. Fats appear to affect the gastro-intestinal motility adversely in patients suffering from functional gastro-intestinal disturbance. Atropine aids these individuals because it occasions an integrated motility and therefore replaces the functional motor disorder, even though the motility of the digestive tract as a whole is depressed.[11]

From a structural, secretory and motor viewpoint the hepatobiliary and the gastro-intestinal tracts have been found essentially normal in each case.

Case Report.—Pvt. R. G., colored, aged 25, was always well until June, 1942. He was hospitalized in the Station Hospital from then until September. He had jaundice of six weeks' duration, complicated by mumps, 100 days after he had yellow fever vaccine. He formerly was athletic, but since jaundice can participate in no physical activity. His fat intolerance is 3 plus, associated with a constant dull right upper quadrant soreness.

There were no abnormal physical findings. After 2 mg. bromsulfalein he showed 5 per cent retention in 20 minutes. Biliary drainage showed no "B" bile. "C" bile had large clumps of white blood cells containing coliform organisms. The Wassermann was negative, Frei positive, and he showed a flat dextrose tolerance curve after a low carbohydrate, high fat diet.

At present, exhaustion, dyspepsia and mild right upper quadrant soreness continue. There is minimal emotional instability. He is unfit for active duty on account of persistence of the above symptoms.

MALNUTRITION

Seventy-five per cent of our series have shown weight loss, with failure to regain their former level even after one year under active treatment. High caloric and high vitamin intake was begun during the convalescence and continued constantly in every case and this resulted in a slight increase in weight, but most have been unable to reach their previous average by many pounds. One practical reason for this is the universal refusal of these patients to consume fats in any form.

In investigating this, absorption and excretion studies have been performed in practically every patient.

Gastric secretion and motility have been consistently within the normal range. Small bowel studies, using the motor meal technic, have shown hypermotility to a significant degree in two cases and moderate segmentation with mild distortion of the mucosal pattern in one case. These are findings consistent with a disturbed physiology of the small intestine, but are not considered significant.

In eight cases pancreatic lipase determinations were performed on secretion aspirated from the duodenum after the parenteral administration of mecholyl and normal figures were obtained. Quantitative study of feces for total fat and fatty acid showed a range of from 6 to 16 per cent of total fat, dry weight (normal) and adequate fatty acid to indicate the presence of a normal quantity of fat splitting enzyme. The lipase content of the serum was determined in these same cases with normal findings. These studies are also of some value in eliminating the pancreas as the possible site of disease.

There was no hypoproteinemia, hypocalcemia or anemia in any case and no skin, corneal or mucosal changes to indicate the presence of avitaminosis.

Case Report.—Lt. R. T. K., A.C., aged 27, was well until February 1, 1943, when he developed an acute and severe hepatitis. He had several chills with high fever. He had had foreign service in Brazil two months previously. He had yellow fever vaccine 15 months before jaundice occurred. His course was stormy and he was actutely ill for weeks. At first he was thought

to have Weil's disease. His liver was 4 to 5 finger breadths below the right costal margin, tender 3 plus, icterus index fluctuated, being as high as 214. His jaundice continued for four months. There was change in his hepatic function, as indicated by liver function tests during the stage of jaundice. He had pruritus 4 plus, encephalopathies, 2 plus. Five months after the disappearance of jaundice the patient presents a clinical syndrome with:

(1) Unquestionable evidence of a pronounced psychoneurosis
(2) Marked nutritional disturbance
(3) Fat intolerance
(4) Fatigue

His examination at this time showed only an increased resistance of the red cells to hypotonic saline, with the presence of target cells, which has been noticed in many of these cases. No malaria was ever found and all other studies were negative, including repeated agglutinations for Leptospira icterohemorrhagica. At present, there is no evidence of parenchymal hepatic damage, but the patient remains chronically ill, with psychoneurosis and malnutrition as the outstanding findings.

EMOTIONAL INSTABILITY

Ten of the twelve reported cases have presented evidence of tension, anxiety, conversion, fixation, depression, vasomotor instability or other phenomena found in abnormal emotional states. Psychosomatic complaints, with evidence of autonomic imbalance, have been outstanding. These patients all have been confined for a long period and have been conscious of no improvement and hence feel frustrated and depressed and some are convinced they are permanently disabled.

In three cases we have observed the development of these psychoneurotic phenomena in soldiers who previously were taciturn and stoic and had demonstrated no abnormal emotional or psychotic behavior but who, on the contrary, had returned from foreign duty with an excellent record of accomplishment and evidence of unusual stability and calmness under the most hazardous and trying combat conditions.

Case Report.—Sgt. H. C., aged 29, after five months' active combat duty on the front line in Guadalcanal, who previously had had no significant illness, had an acute bout of malaria on November 25, 1942, with successive ones on January 1, and January 25. During the latter attack he was semi-comatose. Smears were positive for falciparum and vivax malaria. He was evacuated at this time and had marked anorexia, nausea and right abdominal pain of the colicky type, which was followed shortly by jaundice. He had two subsequent attacks of right upper quadrant pain during February, with marked tenderness in the gallbladder area, which persisted for about one week, and a final attack of similar pain on March 27, 1943. He was thought by the attending medical officer to have acute cholecystitis. He was admitted to Percy Jones General Hospital on April 1, 1943, with an icterus index of 23.5, which fluctuated for a period of six weeks. The liver was enlarged, Grade 2, and the spleen remained palpable for about three weeks. He had definite evidence of liver damage with 40 per cent retention of bromsulfalein in 45 minutes, serum phosphates 8.5, and spider angiomata, Grade 2. He had complete recovery from his hepatitis by June 1.

The etiology of this acute and severe liver disease has remained obscure. It was first thought to be associated with his malaria when obstructive jaundice and cholecystitis were ruled out. There was negative agglutination against Weil's disease and it was finally decided that this probably represented an unusually severe type of epidemic jaundice (catarrhal jaundice). It was therefore thought that his liver would recover without any permanent damage.

With improvement of his liver disease he has experienced marked fat intolerance, pronounced physical exhaustion with loss of drive and persistent right upper quadrant soreness. He is now quite tense, concerned about his physical state and shows pronounced orthostatic phenomena, such as tachycardia and dizziness upon assuming the erect posture. However, he had improved somewhat and on October 19, 1943, a laminectomy was performed for the removal of a nucleus pulposus. He is now ambulatory, but remains disabled, probably from the effect of his hepatitis.

The pronounced nervous reaction and vasomotor instability are new symptoms to this man who formerly was stoic, calm and rather rigid.

THE LIVER

The liver itself has been found consistently normal in size, shape and contour and it has been essentially non-tender. No indirect evidence of hepatic disease has been noted in any patient except the last reported one (Carter), who showed several definite spider angiomata over the trunk. There has been no evidence of collateral venous circulation and studies for esophageal varices and infra-red photography of the abdomen have been done on suspicious cases, with negative findings. There has been no return of jaundice in any case after recovery. Functional studies of the liver were performed with the purpose of determining if possible each individual hepatic function. The excretory functions have been evaluated by means of cholecystogram and bromsulfalein. Neither has yielded any significant abnormal reading except in the only two cases we studied with active infection. We have found that the five-milligram bromsulfalein technic, reading the end point at 45 minutes, according to Mateer, Baltz and MacMillan, is an excellent test of excretory function and is much more sensitive than the originally used two-milligram technic. The detoxifying function has been checked by the hippuric acid test and has been consistently normal. The carbohydrate

studies have been confined to galactose tolerance, which have been negative in every case. The interpretation of the protein metabolism has been evaluated by means of the cephalin flocculation and determination of the albumin-globulin ratio and the formo-gel test. Two of our patients have consistently shown two plus reactions to cephalin flocculation, but they show no other evidence of structural or functional hepatic disease. Cholesterol and cholesterol esters have been determined in each case for evaluation of the lipoid function of the liver. They have been consistently negative except that there has been a diminution of the ester level during the stage of acute hepatitis in the two active cases. Urobilinogen studies have all been negative and the role of the liver in coagulation of the blood has been studied by means of the prothrombin and fibrinogen determinations. These were found in the normal zone in every case. The serum phosphatase has not been elevated in any case except during the acute jaundice when the concentration of this enzyme in the serum has been as high as ten. The study to date shows no convincing evidence that patients presenting the subjective syndrome have any residual hepatic or biliary tract disease.

Case Reports.—W. T., aged 28, was on Guadalcanal from December, 1942, to March, 1943. He had malaria fever January 15 to February 15, and jaundice March 15, ten days after cessation of atabrine. The icterus index was 102. The infection was Plasmodium vivax. He was admitted to Percy Jones General Hospital, May 26. The liver was 2 finger breadths below the right costal margin, tender 2 plus, spleen 2 plus. Smear was positive for Plasmodium vivax. Hepatomegaly continued until September 15. Cephalin flocculation was 2 plus, urobilinogen 1:20, and dextrose tolerance 105-180-175-105-75. Cholesterol was 180. The gallbladder was negative. The small bowel showed hypermotility and segmentation Grade 1, and weight loss 40 pounds.

He had constant upper abdominal fulness, dull right upper quadrant pain and marked emotional instability. All this may have been due to rather persistent malaria, but his symptoms dated from the beginning of jaundice.

Corp. C. H., aged 28, with 2½ years' service, was plethoric, stoic and always well except for recurrent sore throat. He had yellow fever vaccine in March, 1942. He had moderate jaundice for six weeks beginning in July, 1942. He returned to duty and continued for six months. He noticed slowly progressive symptoms of neurocirculatory asthenia. He was hospitalized in Africa in June, 1943, for precordial pain, palpitation, dizziness, weakness and sweating.

Examination showed numerous cardiac extrasystoles. Effort response was 96-132-110. Blood pressure was 130/64 to 150/85. Electrocardiogram showed low amplitude "T" waves. All other physical and laboratory findings were normal.

The final diagnosis was neurocirculatory asthenia.

This is an example of occurrence of the subjective syndrome some months after jaundice in an apparently normal and effective soldier.

GASTROSCOPY

In all fatal cases autopsied of post-vaccinal hepatitis, mucosal and submucosal inflammatory disease of the gastro-intestinal tract has been consistently noted. We can find no reference to any attempt made to study the gastric mucosa during and following active jaundice. We therefore gastroscoped eighteen cases of icterus, four of which were actively jaundiced at the time of the endoscopy. The findings were uniformly normal except in the case of a soldier with subacute, uncomplicated catarrhal jaundice who showed a moderate superficial gastritis. It can be said, then, that there probably is no significant intragastric pathology during or after uncomplicated jaundice.

MISCELLANEOUS

There has been no gross evidence of disturbed metabolism in any of our cases. Three have shown consistently flat glucose tolerance curves. However, it has been our observation that many normal soldiers who have been on a high caloric and high carbohydrate diet will run such a curve, as proven by Conn,[12] in healthy students. It is also known that if these same individuals are placed on a low carbohydrate, high fat intake, the curve will revert to normal. Several of our patients have been tried on this regime, but even after six days of a low carbohydrate, high fat intake their dextrose tolerance curves have remained flat. The hypoglycemia noted in this series and the flat dextrose tolerance curves in three individuals may represent only so-called spontaneous functional hypoglycemia. However, they may be due to some defect in hepatic storage of glycogen or of glycogenolysis, but we do not feel that it is on a structual basis. The blood has shown one consistent finding worthy of comment, namely: a tendency to increased resistance of the red cells to hypotonic salt solution. This has been reported by Greenblatt and Kaplan[13] and is not considered to be a specific reaction, for it has been found particularly in conditions such as sickle cell anemia, target cell anemia, and so on, states in which target cells are found in fair numbers in the circulating blood and these cells have been reported as commonly found in cases of jaundice following parenteral vaccine.

Case Report.—Pvt. H. W., aged 28, had yellow fever vaccine in March, 1942. He was hospitalized in July, 1942, in Belfast, Ireland, with moderate jaundice for one month. At that time and thereafter he has had cramps in the mid-abdomen and is unable to eat fat. He lost 20 pounds but has regained all but 5. He was evacuated and hospitalized in the United States. He returned to active duty in Mississippi in January, 1943, and continued until May, when he re-entered the hospital on account of marked weakness, with numbness of his fingers. After effort he became very nervous and weak. There was no unusual sweating or hunger, but he experienced a mild pulling sensation at the right costal margin.

When examined he had sweaty cold hands and feet, and sluggish deep tendon reflexes. Glucose tolerance curve after special low carbohydrate, high fat diet was 70-84-81-74-55. All other findings were negative except cervical adenopathy, Grade 1.

Exhaustion and mild neurocirculatory asthenia are outstanding. There are no physical or neuropsychiatric factors to account for the condition.

Careful search has been engaged in to locate possible foci of infection to account for the subjective complaints. Several possible minor lesions were located and their removal accomplished, but with no benefit after the ablation of the apparent foci.

COMMENT

From the data presented, the evidence is not conclusive that this syndrome represents a distinct disease entity and, while it points to the liver as the probable source of the disturbed physiology of the entire mechanism, there are not sufficient and conclusive findings to incriminate this organ as the cause of the subjective symptoms. Emphasis should be placed on the fact that the symptoms are psychosomatic ones and that at this time there is no logical reasoning to conclude that organic disease exists to account for the syndrome. The constant pattern of the symptomatology as it has been presented to us, however, indicates that this syndrome does follow as a sequel of hepatitis, that its exact counterpart has not been consistently seen following any other infectious or degenerative condition. The term "posthepatitis syndrome," then, is not a specific one and this subjective disturbance should be considered as an alteration of physiology caused by an unfavorable reaction to a mild infectious process or to confinement of long illness with consequent psychic trauma which results in a condition which more nearly fits under the general heading of "psychoneurosis" than in any other known entity.

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DISCUSSION

(Questions and Answers)

Dr. Jas. Asa Shield, Richmond, Va.—I wonder if Dr. Caravati ran the glucose tolerance test consistently, and if he found any particular diet desirable for these individuals?

Dr. Caravati.—Glucose tolerance curves were completed on each case and only three showed any significant abnormality. These demonstrated constant flat curves and when checked later, there was little change, even after adequate treatment. Feeling that the hypoglycemia and low sugar tolerance curves were due to the type of diet consumed by these soldiers, namely, a comparatively high carbohydrate diet, as recently commented on by Conn, it was thought advisable to see if the tolerance tests would show a normal curve after a change in diet. Consequently, a few soldiers were placed on a high fat and high protein diet, but we did not reverse the former findings. It is our feeling that the tendency to hypoglycemia, as demonstrated by these three soldiers, is probably of no clinical significance.

Dr. Julian M. Ruffin, Durham, N. C.—I was interested in the small intestinal pattern because it is strikingly similar to what we see in deficiency states. I wonder if there has been an area of posterior pain?

Dr. Caravati.—The small intestinal pattern, as observed by us, was identical with that seen in deficiency states. We interpreted it as being a manifestation of a disturbed physiology and the most significant findings were: hypermotility, mild segmentation and slight mucosal pattern alteration. After these soldiers were put on a high caloric diet, supplemented by oral and parenteral vitamins, however, the intestinal pattern showed no change except in two cases. Several of these soldiers were given plasma, together with the high protein diet, feeling that hypoproteinemia might be a fac-

tor, but in no case did it appear to affect in any way the small bowel findings.

In regard to the pain, in none of our cases did they complain of posterior pain. There was, invariably, discomfort under the right costal margin, which was constant, and at times there was associated epigastric discomfort which was always moderate, usually fluctuating and somewhat cramp-like and, as a rule, most marked after meals. It was interesting that no patient complained of periumbilical discomfort as seen so commonly in small bowel disorders. We are not able to explain the pathological physiology of this somatic complaint.

TRICHLORETHYLENE IN DENTAL ANESTHESIA*

By James H. Bennett, M.D.†
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One of the unsolved problems in inhalation anesthesia is that of dental extractions in children. We need a method which can provide adequate anesthesia for the exodontist with maximum safety and minimum postoperative discomfort for the patient. If a mixture of gases and vapors is to be used it should be adaptable to the simpler types of gas machine, which will vaporize a volatile liquid with nitrous oxide and oxygen. There should be sufficient flexibility for the needs of the teaching clinic, where both the exodontist and anesthetist may be novices and where the patient receives no preoperative medication. A non-inflammable agent or mixture would be desirable.

METHODS IN COMMON USE

The combination of nitrous oxide and oxygen is satisfactory for short operations because there are few after-effects in the normal child from a brief period of hypoxia. When anesthesia is prolonged there may be extreme nausea and vomiting or hyper-excitability as the result of cerebral hypoxia.

A mixture of nitrous oxide-oxygen and ether affords better relaxation with adequate oxygen, but the odor is unpleasant to many patients and their relatives. Nausea and emesis may complicate recovery, especially when no premedication has been given.

Ethyl chloride is satisfactory in many clinics, but the possibility of cardiac hyper-irritability, with fatal ventricular fibrillation, must be kept in mind.

Divinyl ether has little effect on the myocardium but kidney and liver damage may occur.[1]

TRICHLORETHYLENE

Because of the work of Jackson and his associates[2,3] in this country and Hewer[4] in England we became interested in trichlorethylene. We decided to determine if a mixture of nitrous oxide, oxygen, and trichlorethylene would be more satisfactory than trichlorethylene in air. The agent is bland and cheap, employed in industry as a solvent. It is supplied in purified form in ounce bottles for treating trigeminal neuralgia. It volatilizes poorly and ignites with difficulty, but it can be made to burn, as Jones and Scott[5] have shown.

In May, 1942, with the cooperation and encouragement of Robert M. Schell, D.D.S., Director of the Dental Staff of the Cincinnati General Hospital, we started a series of 260 anesthetics. White and colored children were included, varying in age from 2 to 14 years. At first we used "trethylene."*

For most of the anesthetics we used trichlorethylene† supplied in pint bottles by the Lederle Laboratories. We found no disadvantage in using the agent after it had been exposed to air for sometime. There seemed to be no decrease in potency or increase in postoperative complications.

METHOD

A gas machine,‡ with a nasal hood, was used for most of the anesthetics. Our present technic is to start with 95 per cent nitrous oxide with a line pressure of 8-10 mm. After a few seconds the anesthetist alternately increases the oxygen content and turns the ether bottle control slowly so that at the end of a minute or 90 seconds the oxygen setting is at 20 per cent or higher and the bottle setting is at "2." The line pres-

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*Supplied in glass-stoppered ounce bottles by Davies, Rose and Company. Recently E. R. Squibb and Sons provided a similar supply.

†Lederle specifications include:
(1) A clear, white liquid with a pleasant odor
(2) A specific gravity of 1.475 at 15-15.5°
(3) A distillation range so that 90 per cent distills within a range of 1 per cent, within which lies the true boiling point, 88° I.C.T.
(4) An alkalinity of 2.0 to 4.0 N/100 HCl.

‡McKesson Nargraf Model L.

sure is then increased gradually to 18 or 20 mm. and the operator is permitted to place the mouth prop and gauze pack. With a cooperative patient usually less than three minutes elapses between placing the nasal hood and starting the extraction.

As soon as the extraction is completed the hood is removed and the patient is turned face down. Many children begin to react within a few seconds. Most of them go home after a few minutes by bus or streetcar, cutting short our period of postanesthetic observation.

COMPLICATIONS

The apprehensive patient often fights the induction of anesthesia and shows excitement during the period of recovery. About a third of all patients cried as they woke up. About one-third of this number (one-ninth of the total) were hysterical and excited.

It was difficult to arouse four patients.

Two patients complained of headache. Another patient who had complained of a headache before induction awoke without it.

Nausea without emesis occurred twice. Eighteen patients retched or vomited, usually for a short period. The incidence of emesis was low in short cases but higher when anesthesia was prolonged or when lunch had been eaten, contrary to directions, or blood was swallowed.

DISCUSSION

Trismus was seen often. Once the jaws had been opened with a wedge the mouth prop was effective, with no sign of masseter spasm. Occasionally dislocation of the jaw occurred, which was corrected when the mouth prop was removed.

Eye signs had little significance. A wink reflex and moving eyeball accompanied many good anesthetics.

Some patients had a period of analgesia after recovering from the anesthetic.

Purposeless movements of the arms and legs often occurred during anesthesia, with no apparent significance.

We cannot confirm the report of Waters and his associates,[6] who found cardiac irregularities during deep anesthesia with trichlorethylene, probably because all our patients were carried in first plane.

When the nitrous oxide tank became empty during an anesthetic we noticed much greater difficulty in keeping the patient asleep, showing that trichlorethylene is more effective as a supplement to nitrous oxide than if used alone.

Premedication with adequate amounts of morphine and hyoscine was helpful in both children and adults. We obtained fair results in the few adults anesthetized with trichlorethylene, but severe headache has been a troublesome complication.

CONCLUSIONS

We have adopted as a routine method the use of nitrous oxide, oxygen, and trichlorethylene for dental extractions for children out-patients of the Cincinnati General Hospital. Our results in the series of 260 cases have been satisfactory. We are convinced that the method is safe and practical for the novice anesthetist who has had supervision and instruction with a few cases.

SUMMARY

A method for inhalation anesthesia in children for dental extractions is presented, using trichlorethylene to supplement nitrous oxide and oxygen.

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DISCUSSION

(Questions and Answers)

Question.—What position is the patient in while the anesthetic is being given?

Dr. Bennett.—All patients are anesthetized on a stretcher, that is, lying down, not in a chair.

Question.—What is the greatest length of time that the patient has been kept under the anesthetic?

Dr. Bennett.—The times ranged up to about twenty minutes. Those were usually cases in which roots were broken off and had to be gotten out with more diffi-

culty than the usual extraction. Most of the cases were under five minutes in length. The reactions that I mentioned come mostly with the longer cases. The patients were hard to arouse and likely to be nauseated.

Question.—I would like to ask the essayist if he uses this medicament just because it is an ethylene derivative or whether it is known to have an affinity toward the fifth nerve? Does he think that played any part in his dental anesthesia at all or did he see any evidence of paresthesia in the face?

Dr. Bennett.—One of the reasons why we picked this agent was the fact that our operators and anesthetists are inexperienced. They are dental interns for the most part. We do not like to have them use nitrous oxide alone which would be more adaptable in skilled hands. We did not like to supplement with ether because these children go home within a few minutes and we do not like to send children on streetcars when they are likely to vomit all over the place. We were looking for something which would be adaptable to the dental office and we picked on trichlorethylene mainly because of Jackson's work about seven or eight years ago with it. The fact that it is used for trigeminal neuralgia was confirmed to some extent in this series, but it is hard to evaluate in children. Some of them had absolutely no pain for some time after they recovered from the anesthesia. They had some degree of numbness in the area of the extraction.

THE ARMY MEDICAL MUSEUM IN THIS WAR*

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The Army Medical Museum was established in 1862 by Surgeon General Hammond, who recognized the opportunity to collect specimens from the battlefields and Army Hospitals, to be used subsequently for the training of "Army surgeons." This has remained the primary purpose of the Museum. While its activities have expanded to include pathology in all of its branches, as well as historic medicine, medical photography and medical arts, the special field of military pathology becomes of paramount importance in time of war.

Although time does not permit the giving of even a superficial outline of the various activities of the Army Medical Museum, the following brief account will indicate the effort that this institution is making to accomplish its basic purpose in the present war.

Shortly after the last war, more concerted efforts were instituted to concentrate in the Army Medical Museum the significant pathologic material occurring in Army installations. Regulations were modified to require that material from all autopsies, and all significant surgical material, such as tumors, be forwarded to the Museum for diagnosis, review of diagnosis, and final disposition. In peace time there is in this material relatively little of specific military importance, and while our Army was small this feature of the Museum's work was readily handled by a limited professional and technical staff. During mobilization, however, when the Army increased from 125,000 to a million and more, it became obvious that even with a sizable expansion in the Museum staff the material coming from the Army installations could not be properly handled. Moreover, there was a shortage of trained pathologists and equipment, so that the laboratories of all Army hospitals could not be staffed and equipped. To meet this situation histopathologic centers were established throughout the country, usually at our larger general hospitals, where well trained pathologists and proper equipment could be concentrated. These centers provide diagnostic service for neighboring posts and, exclusive of non-essential surgical material, forward material from all cases to the Museum for final review and file.

In this way the medical department was enabled to meet the enormous increase in histopathologic work since Pearl Harbor, and the system is still functioning. As our foreign theaters of operations became active, histologic centers were established there, and the Army Medical Museum is now beginning to receive significant amounts of material from combat zones.

All material is reviewed by a staff of trained pathologists, all of them medical officers on active duty, constructive criticisms are returned to the contributing stations, and cases are indexed by patient's name, source, and pathologic diagnoses.

The basic idea is to concentrate all the significant data and material pertaining to pathologic processes occurring in the Army at the Army Medical Museum, where it will be available for present administrative purposes, for current professional use and future scientific investigations, for teaching, and for historic purposes. There is, moreover, another reason for bringing all this material together under one roof. To provide the maximum of professional

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care it is necessary to move Army patients about, from one hospital to another. Consequently, it is important that there be a central source of information. For example, a biopsy may be performed at a post hospital and diagnosis made of a serious condition requiring definitive treatment. The patient is then transferred to a general hospital, which promptly calls on the Museum for opinion and slides. Later he may be transferred to still another hospital, to receive some special treatment; additional biopsies may be performed, or he may die and an autopsy be carried out. Since at all times the Army Medical Museum receives the tissue, the diagnosis and other pertinent data, the files at the Museum contain a life history of such a patient's condition, a record of his treatment, and of the outcome of his disease.

As can be imagined, the amount of material coming to the Museum has increased in almost geometric progression during the past three years. On the average we now receive material from about 15 autopsies and 60 surgical specimens a day, in addition to the trivia which we must review. Coming as it does from all quarters of the globe, this material is comprehensive in its scope, it represents diseases of more or less regional distribution, such as coccidioides from our far western states, scrub typhus from the Southwest Pacific, schistosomiasis from North Africa, and malaria and filariasis from various regions.

What use is made of this material? The Surgeon General's office depends upon our final diagnosis for its statistical records. The professional Service Division frequently calls on the Museum for opinion as to line-of-duty status in individual cases, or for interpretation of conditions that might appear insignificant in individual instances, but be of importance as indicating trends when taken in the aggregate. This can be exemplified by our experience with the so-called "post-vaccinal epidemic hepatitis." In the early stages of the epidemic there were rumors that this disease might actually be yellow fever, but after study of material from the first half dozen or so autopsies, concentrated at the Museum, it was possible to say definitely that the disorder was not yellow fever, and was in no way related to yellow fever, but was a condition that has been afflicting armies during the past two or more centuries.

The concentration of material from pathologic conditions which are rare or of particular medico-military interest makes possible the definitive studies which are being carried out by the Museum staff. In addition to epidemic hepatitis, other conditions of special interest which might be mentioned are the "crush-kidney" syndrome, interstitial pneumonitis, the encephalitides, the Waterhouse-Friderichsen syndrome, lesions of lymph nodes, brain tumors, and tumors of the thyroid. Both epidemic hepatitis and the "crush-kidney" syndrome are relatively new chapters in liver and kidney pathology. To keep our pathologists in the field alert to these special problems, "study batches" of slides with illustrated syllabi have been prepared and circulated. Cases of special interest have been prepared for presentation at clinicopathologic conferences, for use particularly at those posts where facilities are not yet available for presentation of local cases. This material, by the way, is now available to the civilian profession, and information about its scope and the conditions under which it is loaned may be obtained from the Curator.

Tropical diseases have assumed such importance that facilities are being taxed to prepare teaching material in this subject. We not only provide material for military installations, but at the request of the National Research Council we are collecting and distributing material to the civilian medical schools as well. This program is now well under way.

As must be obvious, our pathologic material, coming as it does predominantly from the 18 to 36 age group, affords a wonderful opportunity that has never before existed to learn something of disease distribution in this group. We have been surprised at the results, incomplete though they are at present. Malignancies and fatal coronary disease encountered are but two examples of important conditions, the incidence of which proved unexpectedly high in the military age group. *Tables 1, 2* and *3* will give some idea of the variety and incidence of the diseases studied in our laboratory during a period of approximately 14 months.

Registry of Pathology. — The registry of pathology, which operates under the auspices of the National Research Council, is housed in the pathologic laboratories of the Army Medical Museum. The aim of this registry is the comprehensive investigation of certain special fields of pathology, which at present comprise: ophthalmic pathology, otolaryngic pathology, orthopedic pathology, dental and oral pathology, neuropathology, dermatologic pathology, pathology of neoplasms, with special consideration to those of the endocrine glands, the kidney, the urinary bladder, and the lungs. Through close

Fatal coronary disease (under 35 years)	80
Periarteritis nodosa	62
Ruptured aneurysm of circle of Willis	56
Waterhouse-Friderichsen syndrome	65
Viral encephalitis (after mumps, measles, herpes, lymphocytic choriomeningitis, etc.)	60
Heat stroke	112
Epidemic hepatitis	135
Lower nephron nephrosis (crush syndrome, burns, etc.) over	100

Table 1

NEOPLASTIC DISEASES

Hodgkin's disease	132
Giant follicular lymphoblastoma	41
Tumors of testis	188
Carcinoma of lip	126
Melanoma, malignant (over)	100
Gynecomastia	165
Carcinoma of lung	39
Carcinoma of tongue	16

Table 2

NEOPLASTIC DISEASE (NEUROGENIC)

Neurofibroma	280
Primary intracranial tumors	175
Glioblastoma multiforme	45
Astrocytoma	27
Meningioma	22
Medulloblastoma	17
Miscellaneous	64

Table 3

cooperation with various national societies of medical specialists, records and material in these several fields are brought together at the Army Medical Museum for systematic study, and particular emphasis is being placed on relating clinical course and tissue changes. A yearly follow-up system is maintained on all surgical cases. The number of specimens received is considerable; thus, during 1942 over 1,500 enucleated human eyes and nearly 300 tumors of the bladder were investigated. All the material and the records of the registry are available for study to the Army and to the civilian profession alike. The registry provides the Army with an unexcelled consultation service in every field of pathology.

Another department of the Army Medical Museum whose war activity has rapidly reached significant proportions is the photographic and medical arts division. A number of units, composed of trained clinical photographers and clinical artists and fully equipped to take colored and black and white photographs, still as well as moving pictures, have been organized and trained. These units are sent to our theaters of operations, to serve the medical installations stationed there. A number of such units are now in the field; others are in training. It is also the responsibility of these units to collect and send back to the museum pathologic material, weapons, missiles, insect vectors, photographs, and illustrations that might have medico-military application or be of scientific or historic value.

We suffer under the connotation museum, an institution still thought of by many as a repository for bottled monsters and medical curiosities. To be sure, we have such specimens. As is required by law, we maintain an exhibit open to the public, but in war time, at least, the museum *per se* is the least of our functions, and we like to be thought of as the Army Institute of Pathology, a designation recently authorized by the Surgeon General. It is hoped that when the shooting stops and the proposed new museum and library building is completed, the Army Institute of Pathology will in fact become the center of morphologic pathology in this country and that the vast amount of accumulated material which covers all special fields of pathology will be adequately utilized for training and investigation, not only by the Army but by the civilian profession as well.

STAB WOUNDS OF THE HEART AND PERICARDIUM*

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During the past decade there has been ever-increasing interest in the recognition and treatment of wounds of the heart. This has been especially notable in several southern cities where the large negro population offers much

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*From the surgical services of the Hillman Hospital.

SUMMARY OF CASES

Case	Initials	H.H. No.	Date	Age	Sex	Weapon	Time Before Operation	Shock B. P.	Anesthetic	Incision
1	R. B.	102102	10-11-35	28	F	Knife	1 hour	Marked 0/0	Nitrous ox. Oxygen	L shape
2	J. H.	107479	6-10-36	?	M	Knife	1 hour	Marked 0/0	Nitrous ox. Oxygen	L shape
3	C. J.	107732	6-19-36	34	M	Knife	70 min.	Mod. 70/50	Novocain	Parasternal
4	D. E.	109036	8-18-36	23	F	Knife	3 hours	Mod. 80/50	Nitrous ox. Oxygen	L shape
5	E. S.	110831	11-9-36	27	M	Knife	45 min.	Marked 0/0	None	Semilunar
6	L. G.	111244	11-29-36	?	M	Knife	80 min.	Mod. 86/66	Novocain	L shape
7	S. K.	112075	1-9-37	32	F	Knife	20 hours	Slight 100/60	Nitrous ox. Oxygen	L shape
8	C. R.	113065	2-20-37	34	M	Knife	2 hours	Marked 50/40	Nitrous ox. Oxygen	L shape
9	C. J. R.	117361	9-23-37	22	M	Knife	45 min.	Mod. 80/50	Nitrous ox. Oxygen	Parasternal
10	E. W.	119461	1-16-38	?	M	Knife	1 hour	Marked 0/0	Nitrous ox. Oxygen	L shape
11	M. C.	119896	2-6-38	39	F	Knife	65 min.	Mod. 90/70	Nitrous ox. Oxygen	L shape
12	C. S.	123577	7-19-38	32	M	Knife	2½ hrs.	Mild 90/60	Nitrous ox. Oxygen	Semilunar
13	J. L.	123702	7-25-38	32	M	Ice p.	80 min.	Marked 40/0	Nitrous ox. Oxygen	Semilunar
14	E. B.	128027	2-2-39	28	F	Knife	1 hour	Slight 110/80	Ether	Parasternal
15	T. D.	130320	5-8-39	35	M	Knife	75 min.	Marked 40/0	Ether	Semilunar
16	A. D. H.	132561	7-29-39	26	M	Knife	2 hours	Mild 104/70	Ether	Semilunar
17	W. S.	135878	12-2-39	21	M	Knife	1 hour	Marked ?	Sodium Pentothal	Parasternal
18	F. K.	143317	9-19-40	18	F	Knife	3 hours	Mild 98/70	Novocain	Parasternal
19	A. M.	143513	9-28-40	26	M	Knife	2 hours	Marked 60/30	Sodium Pentothal	Parasternal
20	J. H., Jr.	148808	5-10-41	16	M	Knife	1 hour	Mod. ?	Sodium Pentothal	Parasternal
21	C. W. K.	149589	6-12-41	14	M	Knife	45 min.	Marked 0/0	Ether	Parasternal
22	R. M.	155110	2-20-42	14	M	Knife	35 min.	Marked 60/40	Ether	L shape
23	W. J. W.	155264	2-28-42	21	M	Knife	1 hour	Marked 30/0	Ether	L shape
24	E. M. J.	156186	4-16-42	26	F	Knife	4 hours	Mod. 70/52	Ether	L shape
25	E. B.	156539	5-5-42	33	M	Knife	1¾ hrs.	Marked 0/0	Nitrous ox. Oxygen	Wd. Enlgd.
26	C. B.	158940	9-15-42	26	M	Knife	1 hour	Mod. 76/60	Ether	Semilunar
27	L. C.	159687	10-31-42	32	M	Knife	1½ hrs.	Mild 100/70	Ether	Semilunar
28	J. B.	164840	9-20-43	41	M	Ice p.	1 hour	Marked 0/0	Ether	Semilunar

Table 1

SUMMARY OF CASES

Location Wound	Suture Material	Drainage	Result	Hospital Stay	Complications and Remarks
L. Aur.	Silk	None	Recovery	63 days	Hemothorax
L. Ven.	Ch. C. G.	None	Recovery	56 days	Hemo-pneumothorax
L. Ven.	Pl. C. G.	None	Death	—	Died on table
R. Ven.	Silk	Pleura	Recovery	30 days	Wound infection. Hemothorax
P. A. & Aorta.	Silk	None	Death	—	Died on table
R. Ven.	Silk	None	Death	24 hours	Lived 24 hours. Infarct right lung
Pericard. only	?	None	Recovery	18 days	Hemothorax
R. Ven.	Silk	None	Death	23 hours	Lived 23 hours. Atelectasis
R. Ven.	Silk	Yes	Death	—	Died on table
L. Ven.	Silk	None	Death	—	Lived 30 min. L. Coronary severed
?	Silk	None	Death	—	Died on table
R. Aur.	Pl. C. G.	None	Death	52 hours	Lived 52 hours. Pericarditis. Bronchopn
R. Ven. L. Ven.	Silk	None	Recovery	76 days	Wound infection. Osteo ends of ribs
L. Aur. P. Art.	Silk	None	Death	24 hours	Lived 24 hours. Pulmonary collapse
L. Ven.	Silk	None	Recovery	26 days	Left pleural effusion
R. Ven.	Silk	Yes	Recovery	39 days	Wound infection. Psychosis. Pneumonia
R. Ven.	Silk	None	Death	24 hours	Lived 24 hours. Pulmonary edema
R. Ven. Muscle	Silk	Skin	Death	11 days	Empyema
R. Aur. R. Ven.	Silk	Yes	Death	6 hours	Lived 6 hours. Hemorrhage. Shock
R. Aur.	Silk	Yes	Recovery	32 days	Wound infection. Pleural effusion
R. Aur.	Silk	None	Recovery	14 days	Pleural effusion
R. Ven.	Silk	None	Recovery	26 days	Pericardial effusion
Pericard. only	Silk	None	Recovery	19 days	Pleural effusion
Pericard. only	Silk	None	Recovery	26 days	Pleural effusion
R. Ven.	Silk	None	Recovery	30 days	Psychosis
R. Ven.	Ch. C. G.	None	Recovery	30 days	Wound infection. R. coronary cut
R. Ven.	Silk	None	Recovery	22 days	Pneumonia
Pericard. only	Silk	None	Recovery	?	Hemo-pneumothorax

Table 1

clinical material. By far the majority of reported cases has been in negro patients.

Although the feasibility of heart suture had been previously demonstrated in experimental animals, the first suture of the human heart was done by Cappelin in September, 1895. This patient presented the typical picture of tamponade due to a wound of the left ventricle. The patient died several days later of pericarditis. Farina sutured a wound of the right ventricle in March, 1896, but his patient died six days later of bronchopneumonia. The first successful case of heart suture was done by Rehn, of Frankfort, in September, 1896. This wound was sutured the day after it was inflicted. The first case of successful suture of the human heart in this country, of which the authors have knowledge, was done by Dr. L. L. Hill, of Montgomery, Alabama, on September 15, 1902. The patient was a thirteen-year-old negro boy who was stabbed the preceding afternoon. Tamponade, due to wound of the left ventricle, was present and the operation was done at 1 a. m., in a negro cabin by the light of kerosene lamps. Convalescence was smooth after the third day and Dr. Hill reports that the patient, now 53 years old, is in good health. Although this was Dr. Hill's first heart suture, he had removed a needle from a child's heart and had evacuated blood from the pericardium of a patient with acute cardiac tamponade before 1900. Both patients recovered.

Isolated cases with an average mortality of about 50 per cent were reported before 1930, with collected reviews. Since that time several series have been reported from individual clinics. Elkin reported thirty-eight cases of wounds of the heart and intra-pericardial portions of the great vessels operated upon between 1930 and 1940. There were twenty-two recoveries with a mortality of 42 per cent. Bigger reported twenty-five cases with a mortality of 36 per cent. Griswold and Maguire reported forty-seven cases of presumed or proved heart wounds seen over a period of eight years. Thirteen died before operation and seven were not proved to have heart wounds, but had symptoms warranting such a diagnosis. Twenty-seven cases were diagnosed and treated. Twenty-two cases were operated upon. Of the entire twenty-seven, seven died, a mortality of 25.9 per cent. Of the twenty-two cases operated upon, six died, giving a mortality of 27 per cent. Only one of the seven cases not operated upon died and this patient lived eleven days. Seven of the latter series of cases had been reported by Mayer in 1936. Five patients were operated upon and two were treated conservatively. Two of this series died.

The first successful suture of the heart at Hillman Hospital was done in October, 1935. Since then twenty-eight cases, having acute cardiac tamponade from stab wounds, have been operated upon by sixteen different surgeons, including four residents. *Table 1* summarizes these cases. Twelve of this group died, a mortality of 43 per cent. It is encouraging that all twelve deaths occurred in the first nineteen cases and not a single patient has died in the past two years, during which time nine cases have been operated upon. Three of these cases, however, did not have wounds entering the heart cavities, although severe tamponade was present.

DISCUSSION

Diagnosis in the usual case is not difficult if one is heart-wound conscious. A history of the patient having been stabbed in the chest with the finding of a wound in the region of the heart should immediately suggest the possibility of a wound of the pericardium and its contents. An obvious wound entering the pleural cavity should not preclude the consideration of an associated heart injury. Cardiac tamponade is evidenced by the triad, low arterial pressure (weak or absent pulse and blood pressure), high venous pressure (distended veins), and a quiet heart (distant sounds). Diminished pulsation, as observed by fluoroscopy, may be helpful in diagnosis. The degree of shock is often out of proportion to the amount of visible blood lost. In small wounds, as produced by a needle or ice pick, tamponade is often late in becoming evident. Fluoroscopy is especially helpful in such cases. Severe tamponade may be present without a wound entering the heart cavity. Three of the Hillman cases did not have wounds penetrating the heart muscle, but it was impossible to know, preoperatively, that the cavity was not entered. In such instances exploration is imperative. Dangers of long maintained tamponade are great, not only to the heart itself, but because of cerebral anoxemia. The latter danger is shown in two of the cases reported by Mayer.

It is the opinion of the authors that few preoperative measures are of value. Morphine should be given to allay restlessness. Saline or glucose solutions are of little value, and may be harmful, until tamponade is relieved, except

in instances where they may tide over an actively bleeding patient until transfusion of blood. It is well to have blood administered as the operation proceeds. Stimulants may keep the injured heart going until the intrapericardial pressure can be relieved. The improvement in circulation is dramatic when the tension is released.

Most surgeons prefer a general anesthetic in order to have the patient under control at critical moments. In the series herein reported, ether and nitrous oxide-oxygen mixtures were used chiefly. Local procaine hydrochloride was used twice and intravenous sodium ethyl thiobarbiturate with inhaled oxygen was used in a few cases. Some type of anesthesia, which allows administration of oxygen under pressure, is desirable because of the frequently associated pleural injury. Fortunately, however, many of these patients are young adult males with good vital capacity and pneumothorax is well tolerated.

Technic of the operation has been fairly well standardized. Various incisions have been used with satisfaction. Elkin uses a long transverse incision with removal of segments of the required number of ribs. Griswold advises the use of a modified Spangaro incision. The surgeons operating upon the cases in this report have generally used a curved incision allowing the raising of a musculo-cutaneous flap and resection of as many ribs and cartilages as required for adequate exposure. The actual method of suturing the heart wound and methods of exposing the wound have been described by others. Silk is employed commonly, but plain and chromicized catgut have been used. It is generally agreed that the pericardium should be loosely closed, leaving room between sutures for escape of fluid. Five cases of the Hillman series were drained and three of these had wound infection. The other two cases died, one during, and the other six hours after operation. Sulfanilamide was left in the pericardial sac in three instances, all of which recovered.

Postoperative care has been the same in this group as advised by other authors. The patient is kept in a semi-reclining position; adequate opiates are given for comfort; oxygen is administered until dyspnea is relieved, and other measures are used as indicated. Aspiration of fluid is done as required for comfort. Infusion and transfusion are given as needed. Complications noted in this series include hemothorax, pleural effusion, pericardial effusion, pneumothorax, atelectasis, pulmonary infarction, pericarditis, pneumonia, empyema and wound infection.

The immediate prognosis depends chiefly on the time elapsing before treatment, hemorrhage, and the chamber of the heart injured. In Elkin's cases, the highest mortality occurred in wounds of the left ventricle if one omits wounds of the great vessels. Fortunately, the right ventricle is most commonly injured and this chamber is most accessible and easily sutured. Forty-five per cent of Elkin's cases had wounds of the right ventricle with a mortality of 30 per cent as compared with 60 per cent mortality of left ventricular injuries. The location of the wound in the Hillman series is shown in *Table 2*. Mortality, according to location, is shown in the same table. Damage to a coronary artery is not necessarily fatal, as shown by two of Elkin's cases and one of this group. This would probably be more significant, however, in older patients with sclerosis.

It has been possible to re-examine eight of the sixteen patients who recovered. An additional case is known to have died two years after operation, but the cause of death is not known, the death certificate showing only "death from natural causes." The other eight cases have had careful physical, x-ray and electrocardiographic examination. Three complained of dyspnea on severe exertion, but were able to do hard labor. Their hearts were normal on examination and electrocardiograms were normal. One patient had definite dyspnea and had an enlarged heart with extra systoles and left axial deviation. Pericardial adhesions were probably present in all but gave no symptoms,

LOCATION OF WOUND AND MORTALITY ACCORDING TO LOCATION

Location	Number	Per cent	Mortality Number	Mortality Per cent
R. ventricle	11	41	4	36.3
L. ventricle	4	15	2	50
Pericardium	4	15	0	
R. auricle	3	11	1	33.3
L. auricle	1	3.4	0	
P. Art. and Ao.	1	3.4	1	100
L. A. and P. Art.	1	3.4	1	100
R. V. and L. V.	1	3.4	0	
R. A. and R. V.	1	3.4	1	100

Location not given in one case reported.

Table 2

except in the one case mentioned. The other cases presented no complaints and no discernible abnormality of the heart.

SUMMARY

Twenty-eight cases of acute cardiac tamponade, due to stab wounds of the heart and pericardium, are summarized. These cases were operated upon by sixteen different surgeons with a mortality of 43 per cent. None of the last nine cases has died. The methods used in management of these cases are briefly discussed. Follow-up studies on nine cases, one to twenty-two months after operation, are presented.

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SOME PROBLEMS OF INJURED ANKLES WITH NEGATIVE X-RAY FINDINGS*

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The problem of an ankle which has been injured, and in which no lesion is seen in the x-ray, can sometimes be difficult. Many people are willing to assume that just because an x-ray is negative, the injury is slight and the term "sprained ankle" has come to be considered something very trivial. However, we all know that many of these cases are far from trivial, and in many instances, the disability has been prolonged and the treatment distinctly unsatisfactory. This is especially embarrassing in this day, when much medicine is being written in *Time, Life* and *Reader's Digest,* and in which statements have been made and broadcast to the public that a sprained ankle should be treated with novocain and the patient kept going. If one tries this and fails, or if he fails from any other treatment to get a patient cured in a short time, he is very much embarrassed. On the other hand, it is an old saying that the sprain may be worse than a fracture. Indeed, this sometimes is the case, merely because the so-called sprain has proved more disabling than a given known fracture.

I do not know whether anybody knows exactly what is meant by a sprain. But to me, a true sprain is a minor injury consisting of stretching of a small portion of the ligaments around the joint, and perhaps the tearing of a few fibers. A true sprain is not sufficiently serious to disturb the strength of the joint seriously. However, in many cases, the ankle has been so twisted that many ligamentous fibers are torn and are so badly torn that a dislocation has really taken place. This dislocation has become reduced of itself and when an x-ray is made, no lesion is seen in the film. Sometimes it consists of tearing of the astragulo-fibular ligament, sometimes a tearing of the lower tibio-fibular ligament, and sometimes a combination of these. When these ligaments are torn, the astragalus can rotate to a considerable degree, but will usually have become reduced before the surgeon sees the patient. If such a serious lesion has taken place, a plaster cast is the best form of treatment, and can be applied as soon as the swelling has subsided. A walking heel can be put on and the patient can get about. But if one tries to get the patient up and around with no more support than strapping, he will find that there is a complaint of pain for a long time, and swelling will persist and the patient end up with a permanently weak ankle.

It is a very simple matter to discover whether the lesion is serious enough to justify a cast or not. If novocain is injected into the injured area, and then with the surgeon supinating the foot as far as possible an x-ray is made, it can quickly be determined whether there has been sufficient rupture of the joint structures to permit rotation of the astragalus. If the astragalus does rotate under these conditions, a cast is necessary. If the astragalus fails to rotate under the conditions, then the structures of the joint are sufficiently intact to permit treatment with strapping only, the novocain having already been injected to relieve the pain. We are all aware of the fact that if a shoulder, which has been dislocated, is not kept immobilized until the capsule heals, recurrent dislocations take place, and in the ankle, if the structures have been badly torn, immobilization for several weeks is essential. Therefore, it behooves one, in an ankle which is much swollen, to apply the test just indicated and then apply a cast if necessary. It is not wise to apply a cast indiscriminately to a simple sprain in which there is good structure strength to the ligaments of the ankle.

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Two recent cases which came in on the same morning illustrate these points readily. Each had what would be ordinarily described as a sprained ankle which was caused by an inversion twist. Each ankle was swollen, particularly on the outer side. In one case in particular, the toes were white and the pulse in the dorsalis pedis was very weak. When novocain was injected into this ankle, the pain which had been quite severe, was relieved and the pulse became greater in volume and the toes became pink. Although considerable force was used in supinating the foot, there was no change of position of the astragalus. Light strapping was put on and the patient was able to walk and continued to walk without further pain or difficulty. In the other case, the astragalus rotated after novocain injection and a plaster cast with walking heel was applied.

We have also had an opportunity to make some experiments on a cadaver. It was noted that in the ankle of a fresh cadaver, no amount of force would cause the astragalus to rotate. Then the external lateral ligament was cut and still the astragalus did not rotate. But when the astragulo-fibular ligaments were cut, the astragalus rotated with the application of only a little force. In a second cadaver, the astragulo-fibular ligaments were cut first, leaving the external lateral ligaments intact, and in this case, the astragalus rotated easily.

DISCUSSION

(Questions and Answers)

Question.—I wonder whether the tearing of the tibia or fibula ligament has anything to do with a sprained ankle.

Dr. Carothers.—It certainly does, and while I am not sure whether you can demonstrate the condition so readily in the x-ray when that ligament is torn as you can when the fibulo-astragalo ligaments are torn, the tearing of that ligament is a serious injury and should be treated accordingly. It can usually be discovered, I believe, by the area of tenderness.

Question.—I would like to ask Dr. Carothers if he has had any experience with sprained elbows or any other joints with this same technic?

Dr. Carothers.—No, I have not.

Question.—I would like to ask the doctor what strapping procedure is used in mild cases.

Dr. Carothers.—I strap up the outer side and pronate the foot to support the hurt side, an ordinary six strap. I believe it is called a Gibney dressing in the book.

Question.—I would like to ask Dr. Carothers how long he leaves the cast on in these cases?

Dr. Carothers.—I started out leaving the cast on about a month. A few weeks ago, a patient took it off himself in about ten days. He had had quite a dislocation in his ankle when he twisted it and he got his cast wet and took it off and came in and told me he was ready to go back to work, the work being that of a railroad freight brakeman. He did, and continued to work. I think that perhaps two weeks is sufficient. Two weeks is the established length of time in immobilizing a dislocated shoulder. At any rate in this one case two weeks was quite sufficient and worked very well.

Question.—Can you recognize this dislocation under the fluoroscope or must we take a plate?

Dr. Carothers.—We do it under the fluoroscope most of the time. I have plates, of course, so that I can make lantern slides, but it can be done under the fluoroscope quite readily.

Dr. Lloyd J. Netto, West Palm Beach, Fla.—Too many of these ankles are treated by home methods with epsom salts and hot water and so forth.

For any ankle, whether you are able to show a displacement of the astragalus or not, you are absolutely unable to demonstrate a torn ligament with the x-ray as such. If they have any ecchymosis, enough bluish discoloration, enough swelling, as Dr. Carothers mentioned in one of his cases, you are justified in putting on a cast. If after four or five days the swelling has gone down and the pain has been relieved, then the simple strapping will do.

I have had the experience of leaving casts too long on the ankle and in that instance we get a lessening of the blood supply and a longer period of healing than would have been otherwise. I do not hesitate in serious ankle sprains to put on a cast for from five to ten days and then resort to strapping.

TREATMENT OF RESISTANT CASES OF ENURESIS BY PRESACRAL NEURECTOMY*

By REX E. VAN DUZEN, M.D.
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It is not my intention to discuss in detail all types of enuresis. Mathé[1] defines enuresis as an incontinence which, as a rule, is functional in origin, but sometimes associated with general disorders, neurologic disturbances, and pathological lesions of the genito-urinary organs. Most people speak of it in relation to nocturnal incontinence in the infant and adolescent child. In the broader meaning of the word, it consists

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of involuntary micturition both diurnal and nocturnal. It is not restricted to the child, but may be seen in the adult. Mathé says that diurnal incontinence is normal up to one, and nocturnal incontinence up to the age of two, after which vesical control should have been accomplished. Many people feel it is normal up to puberty. It is often said that it will disappear at puberty. I have had patients say their doctor told them it would cease after sexual relations, but some of my resistant cases were actually made worse after marriage.

Enuresis has been discussed since the time of Hippocrates, but it has received more attention since the advent of the cystoscope. Before the development of urology as a specialty, it was mainly treated by the giving of belladonna or its derivatives and by urethral dilatation. This regime cured most cases. The restriction of fluids and the "alarm clock" were frequently advised. It was natural that a few cases did not respond and when the smaller cystoscopes were introduced, cases were described due to congenital valves, polyps, enlarged verumontanum, and so on. Trosseau described it in 1870 as an expression of an irritable bladder. Fuchs described cases due to spina bifida. Anderson and others have stressed the psychiatric aspects of enuresis. This has led to a very confused picture. Undoubtedly there are many causes of enuresis.

Stockwell and Smith[2] classified their cases according to the following chart:

(1) Organic (13 per cent)
  (a) Local
    (1) Sclerosis of neck of bladder (observed in males, two cases)
    (2) Congenital weakness of sphincter (observed in five-year old girl)
    (3) Hypertrophy of verumontanum (one case)
    (4) Posterior urethral valve (one case)
    (5) Rectal fissure (one case)
    (6) Pinhole external meatus (three cases)
  (b) General
    (1) Endocrinopathy (one case)
    (2) Tuberculosis (renal) (one case)

(2) Neuromyogenic (37 per cent)
  (a) Conditioned reflex (twenty-one cases)
  (b) Neuromuscular imbalance of sphincter (thirteen cases)
  (c) Myelodysplasia (three cases)
  (d) Pathologic condition of central nervous system (no cases)

(3) Psychogenic (50 per cent)

The relative frequency varies with the type of institution. In the Scottish Rite Hospital we see mostly neuromyogenic. In the urology clinic at the Children's Hospital it is about equally divided between the organic and the neuromyogenic types. The pediatrician will probably see more cases of psychogenic origin. These cases are usually cured before it is necessary for the urologist to be consulted. For these reasons any attempt to arrive at a relative percentage may be misleading.

Because the urologist is usually called after the child has received treatment from the pediatrician, he is not called upon to try the simple treatments such as restriction of fluid intake after the evening meal, frequent awakening at night and various attempts at curing the disorder by either threatening or compensating the child. Both methods have their advocates. When the urologist sees the child, the history is most important. Next the examination of the external genitals should be most complete. A pin hole meatus, retained smegma and pin worms, are all cited as causes. I recently saw a child who had had most of the skin removed from the shaft of the penis by a series of circumcisions and he was still a "bedwetter." The urine should be examined for sugar, or tubercle bacilli if the history is suggestive. If one is unable to find the causative agent, cystoscopy and complete urological study are indicated. Cystometric studies may be helpful. Any pathological condition which is found should receive appropriate treatment. Valves and polyps should be fulgurated. Sclerosis of the vesical neck and urethral stricture should be dilated. Granular urethritis responds well to weak silver solutions. If the case does not respond, the neurologist may be most helpful. After the most careful and painstaking regime, a few will fail to respond.

Case 1.—Mrs. B., aged 21, was seen because of enuresis both diurnal and nocturnal. It was often impossible for her to sit in a show or church more than one hour without soiling her clothes. Riding in a car over rough roads caused soiling. The patient was not aware that this was happening. She had been treated for three years for disease of the vesical neck, but no improvement in urinary control was noted. She had taken large doses of thyroid, even as much as twenty-five grains a day. A neurological examination by a competent neurologist showed no anesthesia about the vagina or external genitals. There was no demonstrable muscle weakness or paralysis. The patient had first been told that her condition would improve after puberty, but no improvement was noted. Then she was told it would improve after marriage. She had been married eleven months and

the enuresis had become worse. She now awoke every night with a wet bed, no matter what was done. This produced an intolerable condition in her married life and her husband was threatening divorce.

The general examination showed nothing unusual. Cystoscopic examination was performed. The bladder mucosa was everywhere pale. There were no polyps or cysts about the internal sphincter area. When the patient was instructed to void, there was normal contraction of the trigone muscle. The posterior lip of the internal sphincter depressed promptly and returned to its normal position promptly when the patient ceased straining.

In reviewing the findings in this case, we noted a young girl with normal physical, neurological and cystoscopic findings. She did not become aware of urine's escaping and the problem presented itself of making the passage of urine more difficult. I felt if the starting of the act of urination was made more difficult, that she would awaken before any urine escaped. I considered various methods of plicating the muscles of the deep urethra. In 1927, I noted that it was more difficult to start the act of urination after I had resected the presacral nerve. This was in direct opposition of the statements of Learmonth. On April 15, 1935, I performed a presacral nerve resection. Since that time there has been no leakage of urine either diurnal or nocturnal except during the menstrual period. During the first year, there was involuntary escape of urine on two occasions, but the patient believed it was due to irritation from the sanitary napkin.

Case 2.—Miss M., aged 15, was referred to me by the Child Guidance Clinic because of enuresis. This child has had prolonged psychoanalytical studies with no improvement. She was becoming an introvert because of her malady. Physical and cystoscopic examinations were negative. In July, 1941, a presacral nerve resection was performed. The results were immediate and complete. She entered college in September, 1941. She carried the usual scholastic work and acted as secretary to the college president. She continues to earn her expenses at school while carrying the regular courses of study. She is interested in her surroundings, friends, and has recently married. There has been no return of the enuresis.

Case 3.—A boy, aged 9 years, was seen in the Scottish Rite Hospital because of urinary incontinence which developed coincidentally with post-measles encephalitis. Examination showed a spastic paralysis of the lower extremities. There was a black slough covering the exposed part of the glans penis. Examination was very painful and it was impossible to pass a catheter without a general anesthetic. No increased bladder dullness could be shown by percussion. The neurologist reported that this was not a trophic ulcer, but was due to constant soiling with urine. It improved when the glans was exposed to ultraviolet light and after repeated use of drying powder. April 20, 1942, I performed a presacral neurectomy and at the same time section of the obturator nerves was performed by Dr. Girard. September 2, 1942, the patient reported good bladder control both day and night. In November, 1942, the patient developed anterior poliomyelitis. He was again seen June 9 1943, because of enuresis since the attack of anterior poliomyelitis. He showed loss of adductor muscle action from section of the obturator nerves and in addition weakness of the hamstring and peroneal groups of muscles. He had no leakage of urine during the day, but wet the bed about three times each week. There was no residual urine in the bladder. There was no anesthesia of urethra or bladder. Instillation of 0.5 per cent silver nitrate resulted in improvement at first, but later failed to help. Normal salt solution was injected into the perineum about the bulbous urethra and helped for two to three weeks. Trasentin was given in large doses with no avail.

Case 4.—Miss K., aged 11, gave a history of incontinence of urine since birth. Her mother had found that the bowels could be kept partially continent by restricting fluids and keeping the child on a "dry" diet. The mother said that the child had had a meningocele operation at eleven months of age and had never developed any urinary control.

On June 10, 1940, I transplanted the gracilis muscle beneath the urethra. The results were only partially successful.

On August 17, 1940, I performed the presacral neurectomy and at the same time plicated the rectal sphincter with ribbon gut suture as described by Lowsley.[4] I have never obtained so satisfactory a result from the gracilis muscle transplant as in this case.

I can explain the good results in this case only by the fact that I also performed a presacral neurectomy. I have since performed presacral neurectomy on two other similar cases after having transplanted the gracilis muscle around the urethra with good results in daytime, but not at night.

As I said before, the conception that presacral nerve resection produces a delay and impediment to urination is contrary to the writings of Learmonth, Langworthy, Kuntz and others. We cut the presacral nerve on both dogs and monkeys and in not a single case was relaxation of the bladder neck noted. We then cut the second and third sacral nerves on the same and other animals and in every case we saw relaxed bladder necks within one month postoperatively. It is very difficult to demonstrate trigon muscle paralysis in an animal's bladder. In the human, this is easy to demonstrate by the use of the cystoscope. In many cases, the ureteral meatus becomes patulous. A careful history of these cases will disclose the patient has a delay in starting urination and often has to strain. It was on the basis of these observations that I decided to carry out presacral neurectomy on *Cases 1* and *2*. The results have justified my method of attack. *Case 3* is a most interesting problem. Here we have a boy with spastic paralysis and uncontrollable urgency of urination without evidence of infection or malignancy

in the bladder. I am not sure whether the development of urinary control was obtained because of paralysis of the trigon muscle or because of lessening the sensory impulses from the bladder. Most observers feel that the sensory impulses travel both by the presacral and by the sacral nerves. Then when this child developed a detrusor muscle paralysis after anterior poliomyelitis he became enuretic. The loss of trigon muscle served no purpose, as its antagonist, the detrusor muscle, which forms the internal sphincter, was now paralyzed, and our problem was to replace the detrusor muscle action. Stimulation with silver nitrate was partially effective. A fascia or muscle transplant offers the most hope for repair.

I believe we should discuss the action of trasentin in these cases. Simons[3] has reported its use in developing urinary control in cases of dementia pracox. I have tried it in a few cases of enuresis.

Case 5.—A girl, aged 9, was seen in the Scottish Rite Hospital for incontinence of urine in July, 1943. She had had transacral fusion in April, 1943. She was completely incontinent. There was saddle anesthesia. The patient was in a plaster cast and muscle action could not be tested. Cystometric study showed a filling impulse at 50 c. c., desire to void at 350 c. c. and voiding at 400 c. c. Intravesical pressure was 14 at 50; 22 at 350, and 28 at voiding. There was no residual urine. The patient was given two tablets of trasentin three times daily. She was again seen in August, 1943, and reported complete control of urine. In October, 1943, her urination was normal and all medication was stopped.

I do not believe this was due to normal recovery of nerve function. There was no improvement until two to three days after starting the drug. I then tried it on *Case 3* with no improvement. I have tried it on several cases of enuresis in the clinic with no definite improvement. It is my impression that trasentin is effective in those cases in which the central fibers are disturbed, and that it has no effect upon parasympathetic paralysis.

Further relaxation would not improve the symptoms. But if the sphincter or detrusor muscle is hypertonic, trasentin may produce sufficient relaxation to improve the symptoms. Presacral neurectomy alone has not improved cases with paralysis of the detrusor muscle and the internal vesical sphincter, unless in conjunction with a plastic operation on the internal sphincter.

In conclusion, presacral neurectomy is indicated in cases of obstinate enuresis. It produces delay in starting the act of urination. It requires the detrusor muscle to contract more vigorously before the sphincter is opened. This is caused by the paralysis of the trigon muscle and is sufficient to attract the patient's attention, thus bringing the external or voluntary sphincter into play. The results have been most gratifying. In the cases secondary to meningocele operation in infancy, plastic operations have given better results when combined with presacral neurectomy.

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DISCUSSION

(Questions and Answers)

Question.—I would like to ask the doctor if he has tried ephedrine in enuresis?

Dr. Van Duzen.—Ephedrine has not been satisfactory in my hands in treating enuresis. Many cases are helped for a short time then relapse. It has been useful in controlling the so-called "stress incontinence" in women. I have seen men who are threshold prostatic cases, and who have used medicine containing ephedrine. Several of these cases developed complete retention which cleared up on withdrawal of the medicine. But in children it has not given consistent results. I am not able to state why it acts different in the young and in the adult.

THE BIOLOGICAL ACTIVITY OF VARIOUS ESTROGENS*

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The relative activity in man of the various estrogens now available for clinical use is of considerable importance, but it has been difficult to determine these relative potencies except by animal bioassay. This method of bioassay likewise has its shortcomings, chiefly because estrogens are usually bioassayed in animals by injection, whereas for clinical use many of them are given

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by mouth. Some estrogens are relatively much more active by parenteral route than they are by mouth, whereas other estrogens, such as stilbestrol, are nearly as potent when taken by mouth as when given hypodermically. In addition, there is difficulty in using the international unit in such manner that it is truly significant. An international unit is defined as the biological activity of one-tenth microgram of estrone. Estrone has a measurable effect for only a few days. The activity of all of the natural estrogens is qualitatively the same as that of estrone. Derivatives such as estradiol benzoate have a more prolonged effect. A single injection of this in a castrated rat produces an effect which lasts four to five days. It is not possible to compare the action of estradiol benzoate with that of estrone, since a single injection of the benzoate produces an effect lasting approximately two to three times as long. Because of this difficulty there is a second international unit, known as the international benzoate unit. This is defined as the biological activity of one-tenth microgram of estradiol benzoate. The international benzoate unit, however, represents considerably greater biological activity than does the international unit of estrone. To make the matter still further complicated, other esters of the estrogens have been produced which have a more prolonged action than does estradiol benzoate. It is equally difficult, therefore, to compare the activity of these with either the international estrone unit or the international benzoate unit.

These various units, together with the numerous preparations available, have caused a great deal of confusion, but actually in practice the clinician uses whatever preparation he is familiar with and has learned by experience what dose to use. He arrives, therefore, by trial and error at what might be called the "human unit." There are several ways of arriving at this so-called human unit. The first method, of course, is that used clinically through determination of the minimum amount necessary to relieve the symptoms of menopause. This method is obviously subject to many errors, since there is a wide variation in the amount of active material needed by various patients who have approximately the same type of symptoms. More objective methods are needed. Two objective methods can be used in practice. The estrogens all stimulate the vaginal mucous membrane, and this alteration in the mucosa is manifested by a change in the type of cell found in the vaginal detritus. If these cells are properly stained it is quite easy to tell whether the estrogen being used has been effective or not. The second procedure is the induction of experimental menstruation in castrated women. This method has been found quite effective in monkeys. It is possible to inject castrated monkeys for a period of two to three weeks, following which a menstrual period takes place. This bleeding, known as "withdrawal-bleeding," appears approximately one week after therapy has been discontinued. The bleeding is indistinguishable from that occurring during a normal menstruation. The endometrium, prior to its breakdown, does not, of course, show progestational changes. It is rather, the type of endometrium found in patients and in monkeys with anovulatory cycles. It is also very well known that the withdrawal-bleeding can be induced in castrated women with regularity, the estrogen being given for a period of two to three weeks and then discontinued, after which time a menstrual period takes place. After this it is possible to inject again and so on. Menstrual periods may thus be induced with regularity in castrated women providing the uterus is present. This last method is the one which has been used in this particular study.

The eight women used in this study were all relatively young, the youngest being 22 and the oldest 34 years of age when the study was begun. Four of these patients were castrated in our own clinic because of incapacitating chronic salpingitis, two of them were castrated elsewhere for the same reason, and one was castrated elsewhere because of bilateral dermoid cysts of the ovary. One of the cases was of special interest. She was castrated at the age of 19 because of a hysterical disorder, the nature of which was not clear. This patient had the usual symptoms of the menopause following castration, but therapy was not begun until she was 34 years of age. At that time her complaints were headache, insomnia and nervousness. It was thought that these symptoms might possibly be due to ovarian deficiency, consequently treatment was given. The symptoms all disappeared under therapy. In this small group of patients 87 menstrual periods were produced.

The studies were begun at a time when only injectable estrogens were available. In general, the subjects were injected twice weekly, usually in the deltoid muscle, for a period of three weeks. A rest period of two weeks was then given and during this period menstrual bleeding occurred if the dose had been adequate. In general, therapy was begun in all subjects within

INDUCTION OF WITHDRAWAL-BLEEDING USING ESTRADIOL BENZOATE

Total dose mg.	Weekly dose mg.	Interval between last injection and onset of bleeding	Duration of flow	Average
10	3.33	7	4	
10	3.33	6	5	
10	3.33	8	5	4.7
6.67	2.22	9	1	
5.0	1.66	7	4	
5.0	1.66	14	4	
5.0	1.66	9	5	
5.0	1.66	10	4	
5.0	1.66	4	5	4.6
5.0	1.66	11	5	
5.0	1.66	5	6	
5.0	1.66	8	4	
5.0	1.66		no bleeding	
5.0	1.66		no bleeding	
2.0	.66		no bleeding	
2.0	.66		no bleeding	
2.0	.66	7	4	4

Table 1

a few weeks or months after castration. Fairly large amounts of estrogen were given initially, since the primary aim so far as the patient was concerned was to relieve symptoms.

The observations recorded in *Table 1* with estradiol benzoate serve to illustrate the program followed. A dose of 1.66 mg. of estradiol benzoate was given twice weekly for a period of three weeks, making a total dose of 10 mg. This dose was tried three times and in each instance menstrual bleeding occurred. Smaller doses were next given. When a dose of 1.66 mg. was given weekly menstrual bleeding was produced in eight out of ten trials. When the amount was further reduced to 0.66 mg. weekly menstrual bleeding occurred once in three trials. From inspection of this table it is quite obvious that the larger doses of estradiol benzoate which were used produced bleeding regularly, whereas the smaller doses produced bleeding with less frequency.

Studies similar to those made with estradiol benzoate were made with estradiol dipropionate and estradiol monopropionate and with estrone. The studies with estrone are inadequate chiefly because estrone is considerably less potent per milligram than is estradiol benzoate. In order to give enough estrone intramuscularly to induce withdrawal-bleeding it is necessary to give approximately four milligrams per week, making necessary four injections per week.

While the studies with the injectable estrogens were under way, alpha estradiol became available for oral use. This was likewise studied systematically to determine how much was required to produce withdrawal-bleeding. Soon after this, numerous estrogens became available commercially which are effective by mouth. Ethinyl estradiol, stilbestrol, hexestrol, dimethoxy stilbestrol, monomethoxy stilbestrol, sodium estrone sulfate, estrone, sodium estriol glucuronidate, have all been studied. The results of these studies are tabulated systematically in *Tables 2, 3, 4* and *5*.

In the entire study 130 observations were made. Withdrawal-bleeding was produced 87 times, and in 43 trials no bleeding was obtained. These observations are limited in number, to be sure, when compared to the numbers usually required for animal bioassay. For example, in the assay of an estrogen it is usually necessary to find the dose which will produce estrous in approximately 50 per cent of about 20 rats in order to determine the activity with moderate accuracy. It is quite apparent, therefore, that the data obtained from this study are inadequate to compare the estrogens studied with a degree of precision such as is usually demanded from animal bioassay. It is not possible to determine the amount necessary to produce withdrawal-bleeding in 50 per cent of the cases from the data so obtained.

Fortunately, there is a method which serves to augment the data without increasing the number of experiments. This method was devised by Behrens for deducing the minimum lethal dose of certain drugs. It assumes that those animals which succumbed to a small dose would also have succumbed to all larger doses tested and conversely that those animals surviving a larger dose would likewise have survived all smaller doses. This method cannot be directly transferred to the data obtained in these observations because many observations were made in a single individual. If one considers each observation, however, as an isolated one, the data can be regarded as indicating a single observation in each of 130 individuals, rather than 130 observations in eight individuals. With this assumption, it is possible to treat the data in the Behrens manner. One only assumes, therefore, that an individual getting a small dose

INDUCTION OF WITHDRAWAL-BLEEDING WITH THE ESTERS OF ESTRADIOL GIVEN INTRAMUSCULARLY

Weekly dose mg.	No. of cases menstruating	No. cases not menstruating	*Behrens		Per cent menstruating
			No. of cases menstruating	No. cases not menstruating	
Alpha Estradiol Benzoate Intramuscularly					
3.3	3	0	13	0	100
2.2	1	0	10	0	100
1.66	8	2	9	2	82
0.66	1	2	1	4	20
Alpha Estradiol Dipropionate Intramuscularly					
5.0	5	0	17	0	100
3.33	2	0	12	0	100
2.5	2	0	10	0	100
2.0	2	0	8	0	100
1.66	3	0	6	0	100
1.0	3	2	3	2	60
Alpha Estradiol Monopropionate					
3.5	1	0	3	0	100
2.33	1	0	2	0	100
1.75	1	1	1	1	50

*Behrens: Arch. Exp. Path. Pharmak. **140**:237, 1929

Table 2

INDUCTION OF WITHDRAWAL-BLEEDING WITH ALPHA ESTRADIOL AND ETHINYL ESTRADIOL ORALLY

Weekly dose mg.	No. of cases menstruating	No. cases not menstruating	*Behrens		Per cent menstruating
			No. of cases menstruating	No. cases not menstruating	
Alpha Estradiol Orally					
21.	4	1	14	1	93
18.9	0	1	10	2	83
17.5	4	0	10	2	83
14.	0	3	6	5	54
12.6	5	1	6	6	50
10.5	1	2	1	8	11
10.0	0	1	0	9	0
8.4	0	1	0	10	0
4.2	0	2	0	12	0
1.4	0	1	0	13	0
Ethinyl Estradiol Orally					
2.1	1	0	11	0	100
1.4	2	0	10	0	100
1.05	2	0	8	0	100
0.70	4	2	6	2	75
0.35	2	0	2	2	50
0.17	0	1	0	3	0

*Behrens: Arch. Exp. Path. Pharmak. **140**:237, 1929

Table 3

INDUCTION OF WITHDRAWAL-BLEEDING WITH ESTRONE AND RELATED DERIVATIVES

Weekly dose mg.	No. of cases menstruating	No. cases not menstruating	*Behrens		Per cent menstruating
			No. of cases menstruating	No. cases not menstruating	
Sodium Estrone Sulfate Orally					
35.	6	2	13	2	87
26.25	4	1	7	3	70
17.5	2	0	3	3	50
8.75	1	1	1	4	20
Estrone Orally					
49	1	0	2	0	100
35	1	0	1	0	100
28	0	1	0	1	0
21	0	1	0	2	0
Sodium Estriol Glucuronidate Orally					
84,000	1	0	4	0	100
42,000	2	3	3	3	50
21,000	1	1	1	4	20
Mixed Estrogens Orally					
126,000	1	0	1	0	100
Estrone Intramuscularly					
4.0	1	0	1	0	100
2.0	0	3	0	3	0

*Behrens: Arch. Exp. Path. Pharmak. **140**:237, 1929

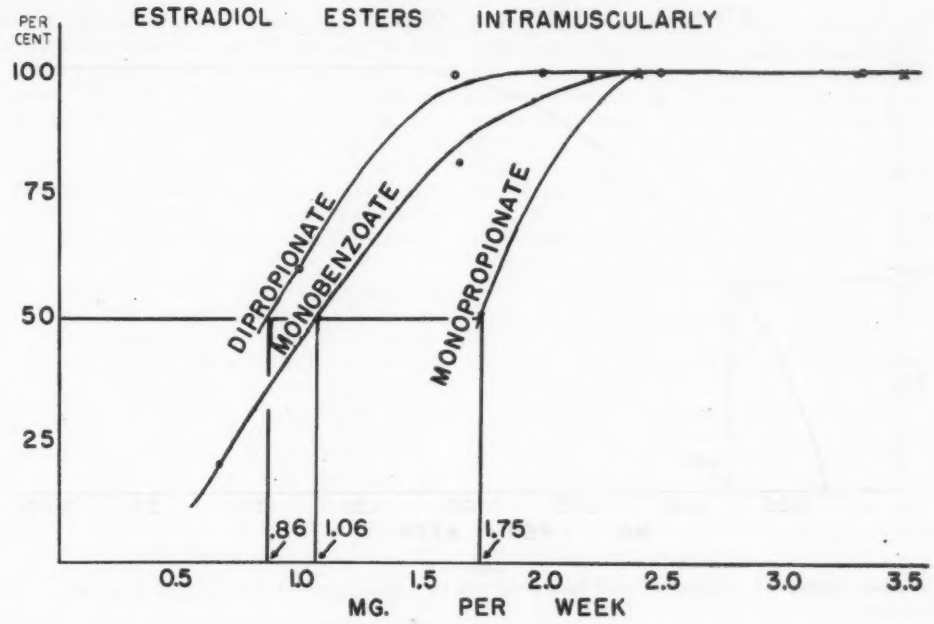
Table 4

INDUCTION OF WITHDRAWAL-BLEEDING WITH STILBESTROL AND RELATED COMPOUNDS

Weekly dose mg.	No. of cases menstruating	No. cases not menstruating	*Behrens		Per cent menstruating
			No. of cases menstruating	No. cases not menstruating	
Stilbestrol Orally					
3.5	6	1	6	1	86
2.1	0	1	0	2	0
1.4	0	1	0	3	0
Hexestrol Orally					
10.5	0	1	0	1	0
7.0	0	2	0	3	0
Dimethoxy Stilbestrol Orally					
14	0	1	0	1	0
Mono-methoxy Stilbestrol Orally					
50	1	0	2	0	100
35	1	0	1	0	100

*Behrens: Arch. Exp. Path. Pharmak. **140**:237, 1929

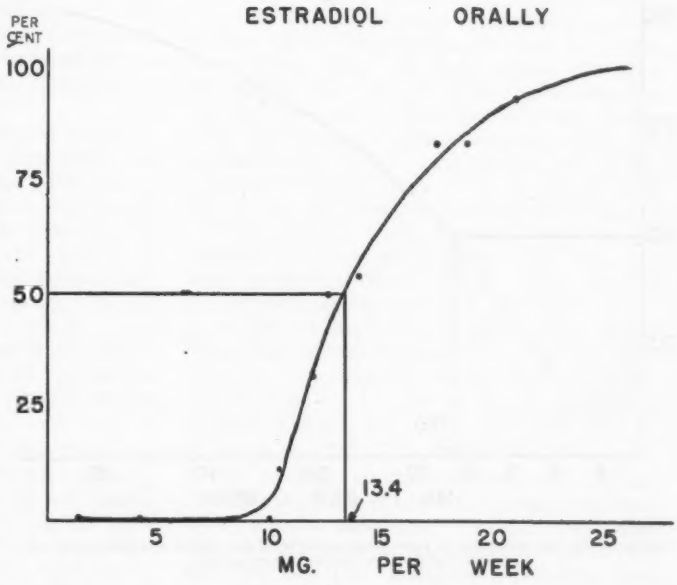
Table 5



Graph 1

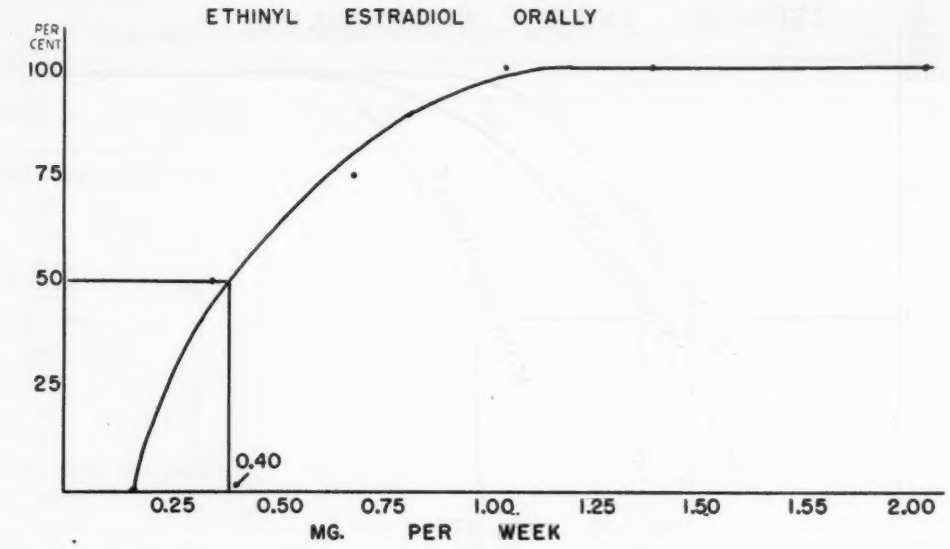
Graph showing the percentage of cases menstruating with the various amounts of the esters of estradiol given intramuscularly.

and having a menstrual period, would likewise have had a menstrual period with all larger doses tested, and conversely an individual failing to menstruate on a given dose would also have failed to menstruate on all smaller doses tested. This procedure sufficiently augments the data so that the minimum amount of estrogen necessary to produce withdrawal-bleeding in 50 per cent of the tests can be determined with some degree of accuracy. Thus a "human unit" can be obtained. These results are tabulated at the right hand of *Tables 2, 3, 4* and *5*. It will be seen from inspection that the percentage menstruating begins at nearly a hundred in most instances and falls off as the dose has been decreased in



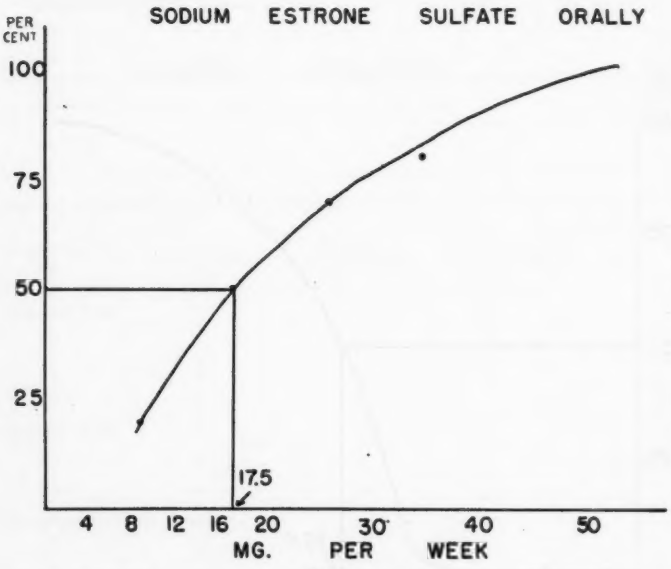
Graph 2

Graph showing the percentage of cases menstruating with the various amounts of alpha estradiol given orally.



Graph 3

Graph showing the percentage of cases menstruating with the various amounts of ethinyl estradiol given orally.



Graph 4

Graph showing the percentage of cases menstruating with the various amounts of estrogen sulfates calculated as sodium estrone sulfate.

a rather systematic manner. When the per cent menstruating is plotted against the dose, as in *Graphs 1, 2, 3* and *4*, it is apparent that one can determine the minimum amount necessary to produce withdrawal-bleeding in 50 per cent of the cases. This serves as a relative figure indicating the relative potency of the various preparations studied.

DISCUSSION

The activity of estradiol and its various derivatives have been fairly well determined in this study. There seems to be very little difference in the activity of the dipropionate and monobenzoate esters of estradiol when given intramuscularly. Too much significance should not be attributed to the minor differ-

ences in the amount found necessary to produce withdrawal-bleeding in 50 per cent of the cases. It is quite probable that there is no true difference between 0.86 mg., the minimum amount for the dipropionate, and 1.06 mg., the minimum amount for the monobenzoate. The monopropionate appears to be less active, but the observations made were rather limited, and this is of little consequence at the present time because the monopropionate is not available for commercial use.

Estradiol itself, when taken by mouth, is considerably less potent than are the esters when given hypodermically. The observations with estradiol orally are sufficiently numerous to give some value to the amount determined. It appears to take about 17 times as much estradiol orally as is required of estradiol dipropionate or monobenzoate by injection. Estradiol monobenzoate is 80 per cent estradiol. If one assumes that 1.06 mg. of estradiol monobenzoate is equivalent to 13.4 mg. of estradiol orally it is apparent that estradiol is 17 times less active by mouth than it is by injection. Ethinyl estradiol, however, is a very different compound. This preparation is exceedingly active by mouth. In fact, it appears to be twice as active by mouth as estradiol monobenzoate is by injection. This preparation, however, has some of the disadvantages of stilbestrol. The larger doses produce nausea in many individuals. It is quite possible, however, that this nausea is due to overdosage since the compound is exceedingly active.

The exact reason for the high activity of ethinyl estradiol has not been determined. In some way or other it seems that the ethinyl radical protects the compound from destruction. The ethinyl radical also alters the effect of testosterone. Ethinyl testosterone, for example, is relatively active by mouth and also behaves as a progesterone-like compound. In fact, it is known as anhydrohydroxy-progesterone since it is more closely related to progesterone than it is to testosterone. Progesterone, however, is inactive by mouth where as ethinyl testosterone is active by mouth.

The study of estrone and its derivatives has not been so extensive as has the study of estradiol and its derivatives. Estrone was not studied extensively because it required injection more frequently than twice weekly. The maximum amount of estrone available in one cubic centimeter of vegetable oil for intramuscular use is 10,000 international units or one milligram. In three cases 2 mg. weekly failed to produce menstruation, whereas in one instance four milligrams did produce withdrawal-bleeding. The minimum dose, therefore, which would produce bleeding in 50 per cent of the cases, would be probably between two and four milligrams. Estrone has been given orally at four different dosage levels. Bleeding occurred on 49 and 35 milligrams per week. Bleeding failed to occur on 28 and 21 milligrams per week. These observations were not all made in a single individual. It appears, however, that it would require 10 to 15 times as much estrone orally as it does intramuscularly. The decreased potency when given by mouth is of the same order of magnitude as the decreased potency of estradiol by mouth.

Mixed natural estrogens were given to one patient, 126,000 units being given in one week by mouth. This is approximately equivalent to 12.6 mg. of estrone, although this particular mixture was made from the urine of pregnant mares and consequently contained appreciable quantities of other estrogens.

Sodium estrone sulfate has been studied rather intensively. This is a natural estrogen obtained from the urine of pregnant mares and is a mixture of the unhydrolyzed estrogens present in the urine. The predominating estrogen is sodium estrone sulfate. It requires about 17.5 mg. of the compound calculated as sodium estrone sulfate to produce bleeding in 50 per cent of the cases. It would appear also that the estrone when present as sodium estrone sulfate is more active than estrone itself when taken by mouth. Sodium estrone sulfate is approximately 72 per cent estrone and consequently 17.5 mg., which is the calculated dose for 50 per cent bleeding, contains 12.6 mg. of estrone. Estrone itself, however, seems to be considerably less potent since 31.5 mg. per week is the equivalent amount. These studies are certainly incomplete and it will require many more observations before it can be fully established that estrone by mouth is not as effective as when it is combined in the form of sodium estrone sulfate. Likewise it is not possible to be sure that estrone orally is actually half as effective per milligram as estradiol orally.

Still another natural estrogen was studied. The unhydrolyzed estrogen of human pregnancy urine, known commercially as emmenin, and made up primarily of sodium estriol glucuronidate, was found to be likewise quite active, but it required fairly large amounts to produce withdrawal-bleeding. About 42,000 oral units per week appears to be the minimum dose necessary

to produce withdrawal bleeding in 50 per cent of the cases. These units cannot be readily translated into international units, because this preparation is highly active by mouth and has been tested in rats by that route.

The synthetic estrogens have been studied, but not so intensively as some of the natural estrogens. Stilbestrol is highly effective, of course, and quite potent when taken orally. A dose of 3.5 mg. per week, 0.5 mg. per day, produced bleeding in six out of seven trials. When 0.3 mg. or less was given per day, bleeding did not take place. These results are in accord with the general clinical impression that 0.5 mg. per day is adequate for the great majority of cases.

The synthetic estrogens related to stilbestrol were found less active than stilbestrol. A dose of hexestrol sufficiently large to produce bleeding was not given. A dose of 10.5 mg. per week failed to produce bleeding in the one case in which it was given, and 7.0 mg. per week failed to produce bleeding in two cases. Dimethoxy stilbestrol likewise was found to be comparatively inactive. A dose of 14.0 mg. per week failed to produce bleeding in the one case in which it was tried. Withdrawal-bleeding was produced with mono-methoxy-stilbestrol in two cases, 50 mg. per week being given once and 35 mg. per week being given the second time. The minimum amount necessary was not determined.

The results of all the observations are tabulated in *Table 6*. The amounts given in this table represent the amounts per week which, in so far as they have been determined, appear to be relatively equivalent. It should be apparent that considerable variation may be obtained. They serve as approximations, however, and do give some idea of the relative potency as determined by this method of bioassay in the woman.

In this study, of course, the symptoms for the most part were relieved, when a dose sufficiently large to produce withdrawal-bleeding was given. It can be stated with almost complete certainty that the amount of estrogen necessary to relieve severe symptoms, such as these young castrated women were having, must be sufficiently large to produce withdrawal-bleeding in most cases. Doses of estrogen which were inadequate to produce bleeding in almost no instance completely relieved the symptoms. It was only when the dose was increased two to three times, and sufficiently to produce bleeding with almost complete regularity, that the individual was completely relieved of the hot flushes, nervousness and so forth. Stilbestrol, in all the cases in which it was tried in adequate dose, did relieve the hot flushes. In the particular group of eight patients, however, stilbestrol was not given to a sufficiently large number of them to be sure whether it was as effective in relieving subjective symptoms as natural estrogens. The same uncertainty exists concerning the other synthetic estrogens. One patient was given mono-methoxy-stilbestrol at two different times in doses sufficiently large to produce withdrawal-bleeding. This dose, however, failed to make the patient feel much better. However, when sodium estrone sulfate was given in equivalent dose, the symptoms were all relieved and the patient felt very much better.

Experience with other menopausal patients, especially young castrated ones, in whom the uterus was removed and who consequently could not be used for this study, seems to indicate that stilbestrol is not so effective as the natural estrogens in relieving the unpleasant symptoms of the menopause. It likewise certainly produces nausea in many patients when 0.5 mg. or more per day is given. The natural estrogens, however, can be given in several times the equivalent dose without the production of any nausea. In many instances four to five times the minimum amount of estradiol benzoate necessary to produce withdrawal-bleeding has been given and in virtually no instance was

QUANTITY OF VARIOUS ESTROGENS PER WEEK NECESSARY TO INDUCE WITHDRAWAL-BLEEDING WHEN GIVEN FOR THREE WEEKS IN APPROXIMATELY 50 PER CENT OF THE TRIALS

	mg. per week
Ethinyl estradiol orally	0.40
Estradiol dipropionate intramuscularly	0.86
Estradiol monobenzoate intramuscularly	1.06
Estradiol monopropionate intramuscularly	1.75
Stilbestrol orally	3.00
Estrone intramuscularly	3.00
Estradiol orally	13.40
Sodium estrone sulfate orally	17.50
Estrone orally	31.50
Mono-methoxy stilbestrol orally	35.00
Dimethoxy stilbestrol orally	14.00
Hexestrol	10.50
Sodium estriol glucuronidate orally	42,000 oral units
Mixed estrogens orally	126.000 int. units

Table 6

nausea produced. The same can be said for estradiol dipropionate. In only one instance did nausea appear, and this after a single injection of five milligrams.

The results recorded in this paper are not very dissimilar from those already reported in the literature, although a survey of the literature reveals but few instances in which careful observations were made on the amount of estrogen necessary to produce withdrawal-bleeding. References are given in the bibliography to some of the more recent studies dealing with the clinical effectiveness of the newer estrogens.

CONCLUSION

The activity of the various estrogens now available has been studied in several castrated women in whom the uterus was intact. The administration of estrogen to these patients resulted in the production of withdrawal-bleeding when the dose was adequate. By studying various doses it has been possible to determine by this means the relative activity of several estrogens.

The author wishes to thank the Schering Corporation for the estradiol, estradiol benzoate and ethinyl estradiol; the Upjohn Company for the hexestrol and dimethoxy stilbestrol; the Ayerst, McKenna and Harrison Company for the emmenin, oral estrone and sodium estrone sulfate; the Wallace and Tiernan Company for the mono-methoxy stilbestrol; The Eli Lilly Company for the estrone; and, the Winthrop Chemical Company for the stilbestrol used in these studies.

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DISCUSSION

(Questions and Answers)

Question.—May I ask Dr. Allen if he has had any cases of allergic dermatitis from the use of stilbestrol and if so, how does he handle it? What length of time and how much of the drug does he usually use in the menopausal syndrome to cure these women, how long, over a period of months or years?

Question.—I wonder if he has any figures on the relative cost of this preparation to the patient?

Question.—Would the doctor give the program for a fourteen-year old girl who has bled and then developed amenorrhea?

Question.—I would like to ask the Doctor what has been his observation in the use of stilbestrol during the menopausal period with particular reference to the control of the hot flushes and usual menopausal syndromes?

Dr. Allen.—I would like to answer the last question first. It has been my experience that any estrogen will relieve the hot flushes if an adequate amount is given. Stilbestrol is as good as any that I know of whether it be given by mouth or by injection, in so far as hot flushes are concerned.

The question whether synthetic estrogens are nearly as effective as natural estrogens in relieving many of the other symptoms that go along with the menopause, such as weakness and depression, is a very difficult one to answer.

I have been using these estrogens since 1934, and have not quite decided whether synthetic estrogens can replace the natural estrogens. I have seen younger patients who do not feel so well when given synthetic as when given natural estrogens of relatively equivalent amount.

Of course, the question always comes up whether one should treat a patient having a normal menopause. Treatment of such a patient does relieve the symptoms, but cessation of therapy is liable to be followed by a recurrence of symptoms and in many cases one really gains very little by treatment with estrogens.

I have had no experience with estrogens in allergic dermatitis. I have seen a few such patients in consultation with dermatologists who associate dermatitis with their menstrual periods. We gave two of those individuals estrogen and as far as I could see it did not improve the situation until an amount of estrogen was given which stopped ovulation.

Another point which has been brought up is how long and how much estrogen should be given. Some of these seven or eight individuals, young castrates, have been under treatment for five years or more. I have an individual in the clinic whom I have not included in this group because she has no uterus, who has been treated with large doses for eight years. During most of this time this patient has had from three to five milligrams of natural estrogen, either estradiol benzoate or dipropionate per week, and she requires that amount in order to feel well. What experience I have had convinces me that if you treat a young castrate adequately you cannot discontinue the treatment because the patient will not per-

mit it. She feels so much better that you have to keep on. I do not see any reason why we should not keep on.

The question always arises as to whether the estrogens should be given continuously or whether it should be given for a period of three weeks and omitted for a period of a week or ten days, then given again. Whenever estrogens are given continuously without interruption functional uterine bleeding is liable to develop. In many cases the bleeding continues as long as the estrogen is given. It can always be interrupted, however, by discontinuing the estrogen. If that is done, the bleeding ordinarily continues about ten days after the therapy has been stopped. Ideally it would be better, therefore, to give the intermittent form of treatment in which the estrogen is given for a period of three or four weeks, then discontinued for a short time, and then started again. The objection to this type of treatment, however, is that patients usually develop symptoms in the short period when no estrogen is given. As a rule, in the experiments which have been recorded in this paper, symptoms of estrogen deficiency began to appear about a week after the therapy had been stopped. No estrogen was then given while the period of withdrawal-bleeding took place. Ordinarily by two weeks after therapy had been stopped the patients were again having numerous hot flushes and feeling generally miserable. In treating the natural menopause, of course, the dose usually can be kept sufficiently low so that continuous functional bleeding does not occur.

I am hesitant to make any specific remarks concerning the cost of the various preparations now available for use. The synthetic estrogens, that is, stilbestrol and some of its derivatives, are very inexpensive compared to any of the natural estrogens. It seems only logical, therefore, that whenever cost is a matter for real consideration, stilbestrol should be used initially. For those patients who cannot tolerate stilbestrol or who cannot get a sufficient degree of uplift from it, the natural estrogens should be used. There are two natural estrogens now available which can be taken by mouth. They are estradiol and sodium estrone sulfate. These are sufficiently inexpensive so that a patient can be given moderate doses for twenty to fifty cents per day. There is very little choice in the injectable estrogens. Estradiol benzoate and dipropionate are probably slightly less expensive than estrone; they also have the advantage of a slightly more prolonged effect.

The question which I have reserved for the last is the one concerning a fourteen-year-old girl who has bled and then developed amenorrhea. It is not at all unusual for adolescent girls to have one or two fairly normal periods and then to have no more periods for a matter of several months. This situation should be recognized by all as a normal occurrence and consequently no therapy should be instituted. These patients, however, during their period of amenorrhea show no sign of estrogen failure. It seems probable that the ovaries continue to produce estrogen and that the difficulty is only one of failure of ovulation. An occasional patient may have hypothyroidism and if this is the case, thyroid is indicated.

OCULAR HEADACHES*

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Dallas, Texas

I have chosen an old subject, "Ocular Headaches," for this general meeting, reserving the privilege of enlarging the subject matter with relevant facts associated in the description of headache.

It may be just as well on this occasion to describe my attitude and procedure in solving the cause of headache in my own patients, referring to the views of others.

I have always had time to hear the story of the patient, for in my earliest training I learned that a history is of value when acquired through questions which disclose the kernel of truth. The approach is all-important and often leads to a further development of correlated facts. Information gathered unsystematically may be confusing.

It was Horton who said there were thirty or more causes of headache. We rarely find patients subject to severe headaches who do not have two or more factors influencing the nerves which produce the symptoms described as a headache.

The percentage of headache due wholly or partly to eyestrain has been variously estimated at from 50 to 90 per cent. Weeks estimated that in ophthalmologic practice about 30 to 60 per cent of headaches are of functional origin.

Of course headaches attributed to eyestrain are frequently due to other causes and a wise ophthalmologist, if the history is not clear, will assume that the headache has some relation to some other part of the body before concluding that the eye is actually the cause. If he was a trained physician before he became an ophthalmologist, he will have many possibilities in his mind.

There are many persons who seek relief where the history of eyestrain from near work, or retinal irritability, due to certain exposures to light and motion, seem so evident you rely upon correction of the refractive error. You assume there is no further reason for a more extensive search for other physical or toxic factors. Indeed the great majority of patients whom the oculist sees, and who have headaches, fall into this category.

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*Read in Section on Ophthalmology and Otolaryngology, Southern Medical Association, Thirty-Seventh Annual Meeting, Cincinnati, Ohio, November 16-18, 1943.

Even though this seems clear, you are in a better position with the use of atropin or some other suitable cycloplegic to begin a search for the ametropia, the heterophorias, the relative strength of the extrinsic muscles of the eye.

If not satisfied with what you find as giving a suitable explanation, you look for the cause of the underlying weakness, checking basal metabolism, focal points of infection, sinus involvement, the gastro-intestinal tract, the blood pressure and laboratory examinations. One should know the environment as well as the occupation of the patient, again analyzing family history and periodicity, not overlooking other conditions which will be brought to mind.

While the character and situation of the pain are not wholly pathognomonic of an eye headache, probably most headaches due to the focusing mechanism are frontal, while those due to anomalies of the adjusting mechanism are more likely to be vertical or occipital. It is thought that 75 per cent of all bilateral frontal headaches are due to eyestrain, whereas the unilateral supra orbital headache may indicate another point of origin.

The age of the patient has not been mentioned, but should never be lost sight of. Some people suffer with headaches when their pupils are dilated, for exposure to light without protection may cause headaches even though the ciliary muscle is at rest. Individuals so sensitive to light should be advised how to protect themselves even though glasses have been prescribed to correct their errors of refraction.

Under uniform, steady, average intensity, if illumination such as daylight, with natural resting periods, the normal eye carries on. After forty years of age, this adaptation and ease of eye use under variations of illumination becomes difficult at best and those who are responsible for the illumination should provide as nearly as possible good daylight.

This rather suggests that individuals respond quite differently to light and use of the eye. Large refractive errors do not always cause the same reflex distress. It is also quite likely that these persons do not use their eyes so much.

Many times have I seen individuals extremely nervous with a high degree of hyperopia, without headaches, relieved of their nervousness when properly refracted. On the contrary, where headaches have been the dominating symptom, the refraction may be much less in dioptres, but a variation in the two meridians of an eye, which constitutes astigmatism, is nearly always the cause of the headache. This effort through accommodation to harmonize images upon each macular becomes a fatiguing and annoying factor, which precipitates nervous impulses affecting the distribution of the fifth nerve, producing pain usually over the frontal and temporal area of the skull. Particularly is this true if there is a variation in the measurement of one eye compared with the other.

A great many people, as they approach the presbyopic age, find themselves more or less exhausted through the overuse of their accommodations as well as extrinsic muscles, headaches being the result. Lancaster also emphasizes that it is not merely muscles that are subject to fatigue but as well the elaborate system of coordination that may develop symptoms recognized as headache. The reserve power and the coordination makes it possible for the two eyes to follow lines of print back and forth in a page, fusing and fixing the image without discomfort. Nature has very wisely given human beings the warning signal of pain, and this pain is usually described as a headache. However, the description of pain is not always the same. The patient may complain of pain without calling it a headache. Crisp asks who can accurately define pain, and who can accurately define headache, except that it is a pain in the head?

As we know, it may occur in the strong, or in the anemic. It often occurs with fever. It may follow spinal puncture, it may occur with a rise of intracranial tension.

The mechanism through which a temporal or generalized headache occurs is referred through the sympathetic nervous system. The sympathetic nervous system is involved in a spasm of the ciliary muscle and we think of it as a reflex headache.

Ward W. Woods, in an article on the anatomy of headache, gives an extremely interesting description of the sensitive areas of the skull, particularly the extracranial arteries, and the dura.

The effect of traction and disturbance of say the longitudinal blood sinus, locates pain in certain areas. The intracerebral arteries are said to be extremely sensitive except high on the convexity of the hemispheres. He proposes six classifications of the types of headaches, all of which is of interest to the oculist inasmuch as he is frequently confronted with patients who have pain classified as headaches and these may or may not have some relation to the refractive error of the eye.

John Hilton, in 1879, said in an article on "Rest and Pain:"

"If the hidden cause of pain be in any particular spot, it is only by tracing the nerve of and from that spot that we can help to arrive logically at the real cause of the symptoms and so divest the cause of its obscurity, applying this method to practice. It is through the medium of the distribution of the cerebrospinal nerves of sensation (the fifth being the true cranial sensation nerve) that we are enabled to explain these pains which are called sympathetic, but which result from a continuity of nerves between the cause and the effect, the disease and the symptoms."

From a different angle Hopkins reconciles the observations of Sluder and others regarding the pain which is relieved by cocainization of the nasal ganglion by applying the reasoning of H. Byrd, who wrote about "Pathological Currents and Cancer."

Neither Sluder nor anyone else had ever been able to offer a sound explanation for the alleviation of pain in remote parts when the nasal ganglion was cocainized. The theory of pathological currents, as proposed by Byrd, paraphrased, begins with the focus of infection, for instance sinuses or teeth. Byrd assumes that this focus acts like a battery, it charges all nerves connected with the lesions. Assuming that to be true, then a further explanation comes when the nerves are charged with impulses and with a certain tension beyond which these nervous impulses then become formidable, for the tension breaks through the insulation at some place on the circuit or nerve remote from the focal point of infection, which is the battery. The insulation being broken, a spark-gap is developed at the locus where the charge shorts. At this place we have pain.

This theory of pathological currents accounts for one's being able to interrupt the impulses at a relay station such as the nasal ganglion or in the course of nerves and it can work either way.

With this hypothesis one could easily see that focal points of infection are important in connection with the eyestrain or muscular imbalances, for a distress in the eye may more easily precipitate a so-called insulation break along the nerves anywhere if you have a corresponding tension through pathological currents, the result of focal infection wherever it may be.

One should not lose sight of a simple method other than cycloplegic, which frequently differentiates headache of ocular from nasal origin. Closing both or one of the eyes to establish physiologic rest, freedom from irritation of the retina or ciliary activity will usually stop the pain of ocular origin.

It is not appropriate on this occasion that we trace the distribution of the fifth or the sympathetic nerves; however, it is well to say that a thorough understanding of the distribution both intra and extra cranially makes it easier to understand the mechanism by which headache is produced either by pathology in the eye or a deviation in measurement from the normal, known as ametropia or to repeat heterophoria as a basis for reflex distress.

There is hardly an organ of the body more liberally dealt with by untrained persons. For this reason you cannot assume that a headache is not the result of some malfunction of the eve without the most thorough analysis.

Refraction is a high art and the refractionist in order to be correct needs everything in his favor: not necessarily the patient's observations to establish evidences of accuracy, but he needs experience in retinoscopy and judgment in evalution of the numerous elements concerned and finally how to prescribe for a given condition.

Different men have attempted to arrange the incidence of frequency of headache due to eyestrain.

Beach's arrangement:

(1) Astigmatism
(2) Presbyopia
(3) Anomalias of accommodation
(4) Muscle imbalance
(5) Hyperopia
(6) Anisometropia
(7) Myopia

Snell's arrangement:

	Per Cent
(1) Simple and compound hypermetropic astigmatism	49.3
(2) Hypermetropia	34.3
(3) Simple and compound myopic astigmatism	11.3
(4) Mixed astigmatism	3.6
(5) Myopia	1.3

Snell does not evaluate the incidence of muscle imbalance which is undoubtedly important as a cause of headaches.

Many years ago a man named Baker in New York created quite a reputation by advocating exercise of the muscles of the eyes. This became a fad and had its followers, not only among the people but so-called eye specialists of different schools of medicine. Many were

not even graduates of any school. It was advocated that glasses should be discarded, undoubtedly largely contributing to its popularity. Many individuals paid very high fees after traveling many miles to different cities to see Baker's converts. This was not orthoptics, as we understand it, but perhaps this quackery helped to bring about in many offices an overemphasis of orthoptic training, admittedly a good thing to do in many cases.

It has been said that the subjective symptoms of eyestrain are expressions of fatigue in the intrinsic or extrinsic ocular muscles or both. Maude of Sydney, Australia, says that the rapidity of onset and intensity are in direct proportion to the fatigability of the muscles and the height of the threshold of pain. The fatigability of the muscles is governed by the amount of effort expended and the reserve force; the threshold for pain, by the sensibility of the patient and vital reserve. Thus while reserve force is becoming exhausted, either by too long sustained effort, or undermined general health, still no symptoms present themselves if a patient's threshold is high, for symptoms do not readily reach consciousness. I think this is a fair statement and the study of orthoptics is of considerable importance and every patient should be examined for muscular imbalances. Hyperphorias, usually associated with errors of refraction with or without exophorias, cause headaches and prisms to correct the hyperphoria can frequently be used with correction of error with great relief to the patient.

I do not wish to convey the impression that I am not interested in binocular vision. We all recognize the important tripod of convergency, stereoptic vision and suppression, and if suppression is to be avoided, you must have convergence and stereoptic vision. This can be developed in ways known to you, making certain you have developed binocular vision with a reserve of convergency.

Some of the factors underlying all of this are facial symmetry or rather asymmetry, and coordination of intrinsic muscles with extrinsic muscle sufficiency. Headache is infrequent in persons with monocular vision, and this is due to the absence of effort involved in straining for fusion.

Pain occurs at different times and under different circumstances, and while sleep frequently eliminates the pain from eyestrain, it is true some individuals wake up with pain. This has been explained in different ways, one, a hangover from seeing a bad movie. For this type of headache, occurring when one awakes, I should immediately eliminate as a cause a closed sinus, particularly the sphenoidal sinus if occipital, and the anterior ethmoidal if frontal.

While there are few places in this country equipped to determine aniseikonia it undoubtedly exists in a few individuals and very probably accounts for our few failures to give relief with lenses prescribed for the easily otherwise determined refractive error.

I regard the abnormalities just related as factors in creating headaches which should have careful attention. I can truly say that with the facilities at your command, with complete relaxation in most instances of the ciliary muscle, when there is no contraindication to the use of a mydriatic you should be able to interpret correctly refractive errors and with good judgment determine the amount of error to be corrected.

Most of the uncomplicated, I mean by that errors of refraction, in otherwise healthy persons with headache, can be relieved without extensive orthoptic or other measures beyond the lenses.

Digressing for the moment, one of the evils of our day, which we submit to without effective protest, is the poorly lighted public conveyances. The pullman companies are well paid, but the wattage used is distressingly low. Those who travel and like to read before going to sleep subject themselves to cheap illumination, which the well-paid corporation should correct. The same observation can be made about some of our so-called well-run hotels, in which some of the bed lamps and other forms of lighting are quite out of harmony with the knowledge of correct illumination. Indirect lighting in some of our best homes has been often meager, and individuals are unnecessarily subject to eyestrain.

In looking for the cause of a headache, we must utilize not only our knowledge of the eye, but the symptoms arising from the sinuses of the head, as well as the physical and systemic factors that exist throughout the body. We should use frequently specialists in other fields, as the history of the patient and the type of the headache indicate. There are diseases of the eye which should not be lost sight of, which produce pain not only in the eye but around the eye and along the distribution of the supraorbital nerve.

I might mention, for example, keratitis, cor-

neal ulcers, definitely iritis and glaucoma. Allergists make many claims as to the cause of headaches, associated with eyestrain, even ocular migraine being classified as of an allergic nature. Some of them go so far as to say that the exciting factor in migraine is nearly always a specific sensitivity to one or more foreign proteins, although there may be many predisposing factors. There are many like Vaughn, Balyeat, Rowe and others who are quite positive that their observations are correct, while on the other hand Alvarez and other good observers claim the allergic nature of migraine has been overstated.

Each of these diseases is readily diagnosed and need not be discussed at length on this occasion.

Migraine has a very definite place in any paper discussing headaches for the occurrence of scotomata as associated with a headache and ocular distress occurring periodically is so characteristic it should not be mistaken. These patients should be refracted and the need of glasses evaluated. They often need glasses and should have them. Rest and a wholesome life without stress is most important for these pateints cannot accept responsibilities without breaking down.

I agree with Alvarez, who pleads the case of the migrainous patient, that general examinations which are made over and over in many different places should be omitted. All of the unhappy symptoms will recur unless simple measures are followed, for the nervous system is unprepared to meet excessive responsibilities. These headaches, when taken early, can be relieved with "gynergen" (ergotamine tartrate) 0.5 mg. hypodermically or in larger doses given orally. Breathing pure oxygen over a period of two hours is highly recommended.

In looking over my records in recent years we have seen comparatively few cases of migraine and since migraine occurs rather frequently it suggests rather widespread knowledge on the part of the people that the eye is not more than an upsetting factor, and that lenses do not completely mitigate the attacks.

In conclusion the salient points would be a careful history, an open mind, as to whether the individual is one's sole responsibility or whether one's analysis shows that a more complete solution of the various factors may best be handled by colleagues in different fields.

HEALTH AND OUR NEIGHBORS*

By FELIX J. UNDERWOOD, M.D.†
Jackson, Mississippi

In a time when plan after plan is being projected for health security on a national, and even a global scale, it behooves each of us to look around our immediate neighborhood or community and reflect upon the type of job we are doing for the people around us before we take on the staggering task of alleviating the ills of the nation and the world. Are many of your neighbors or other members of your community among those less fortunate citizens of the country who allegedly are contributing little to social and economic progress because of inadequate attention to their health needs? The time has come when we must look at the picture in its true light and judge for ourselves how much of the work we have been leaving for "George to do," and what our real duty is in bringing about a correction of existing conditions that all individuals may achieve that most vital of the four freedoms, not mentioned specifically in the Atlantic Charter but certainly implied: freedom from disease. For until they have attained it, their capacity to enjoy all the other freedoms is definitely limited, and as a result there is a lagging in community progress which affects you, me, and all other citizens.

The health of our neighbors and of our neighbors' neighbors is of prime concern at this time as most of us are aware. Only by protecting them against the ravages of disease and promoting maximum physical fitness can we hope to achieve a state of society in which all members will be able to participate and contribute to its well-being. Allow a large number of them to remain neglected and they will probably become a liability, often handicapping their neighbors about them in their struggle for advancement. All of us are familiar with the more obvious picture of health handicaps within a family group and how its structure is weakened when one or two of its members not only fail to contribute to the family effort, but take continually of the energies of the others. The same holds true for the community or whole world family, although not so readily apparent to you and me as in the smaller, more intimate unit.

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†Executive Officer, Mississippi State Board of Health.

The war is bringing home to all of us the global implications of health and disease. Distances have been eliminated and the whole world has resolved itself into one great neighborhood of people. Isolationism will prove ineffective as it always has been, as no one can remove himself entirely from the common dangers and problems of mankind unless he leaves this planet altogether, and even then he cannot be certain of what lies beyond. The truth is that as we have grown closer as nations with increasing intercommunication, involving great numbers of people, we find ourselves confronted by a maze of new health problems. At the same time the feeling is growing that there can be no lasting security for a few unless there is security and protection for all. These problems must ultimately be solved because it is urgent that we have a strong physically fit world population capable of assuming the tremendous responsibilities of rebuilding civilization on a more enduring basis. I have faith that physicians and health workers will give in fullest measure of their resources, talents, and energies to the end that barriers to health may be eliminated.

In planning for such a goal, it is of course necessary to realize that it cannot be accomplished overnight. Looking at it as a whole, it looms so big as almost to discourage individual effort. Therefore, we must be patient with achieving that portion of it which we can; not all at once but little by little until the cumulative effects of all our efforts are really felt. The logical point of starting is our own community, where we naturally have the deepest interest and ties and where the people expect of us counsel and help. We have not done such a bad job in looking after our neighbors' health in recent years, the statistics disclose. In fact, we have done a commendable job, achieving during 1942 the lowest death rate on record for this country. The only thing lacking was that the excellent services rendered did not reach out into all areas of need, and until we are able to see that they do, there will continue to be many dark spots in our national health record.

Extension of well-rounded health programs to every area has been the major emphasis in public health for more than fifteen years, all of which is well and good. It has been a wonderful experience to witness the development of so many full-time county and district health departments and to observe their splendid contributions to community health and progress. These preventive services, however, helpful as they are, are not sufficient to meet the total health needs of the population. As all of us are well aware, adequate medical, dental, and hospital care must also be brought within their reach. So great has been the pressure in this regard from various groups that a sense of frustration has come upon those members of the profession whose one desire has always been the satisfying of these needs. The individual physician feels helpless, realizing there are definite limits to what he can do personally.

The goal being sought is certainly a desirable and necessary one and he is sincere in wanting to do something to alleviate existing conditions. His medical society is the best place, beyond any doubt, where he with his colleagues can develop plans which will help take care of the more immediate needs of his community. It is my growing conviction that when there is adequate health care provided at the community level by the local medical and public health groups, there will be no need for the proposal of national schemes with their costly and unpredictable consequences. Wise are those members of the medical profession who have taken cognizance of this and who are pushing ahead for their rightful place in the direction of any program which attempts to solve the complex problems of this period. No program can possibly be successful without the leadership of those who would be called upon to do the work.

We have yet to see a program formulated which will satisfy the patient, the physician, and the public generally. When one is evolved, it is my belief that it must originate with the local medical groups, bearing in mind the individual differences which go to make up the varying areas to be served. The most frequent problem likely to be encountered, especially in rural areas, is inadequate facilities, both in number of physicians and in hospitals. Where this situation is acute, then there might be some assistance solicited.

In this regard, I must say that no end of tribute is due the great philanthropic organizations, the Commonwealth Fund and the Rockefeller Foundation, whose contributions to community health facilities, the preparation of physicians, and the advancement of medical education have left a lasting imprint on areas throughout the South. There are other organizations deserving mention and other areas being aided by them, but it should be pointed out that all these organizations combined are not strong enough within themselves to bring about the full applica-

tion of present medical knowledge which has marched rapidly ahead of health and medical services now being rendered. The eventual achievement of this objective is dependent upon the individual and joint efforts of the practicing physicians and health workers, and in no small measure upon the individual citizen himself. Whatever service is rendered, to be lasting and effective, must be upon a partnership basis with the patient or citizen, helping him to stand on his own feet and to do for himself those things which he can do. If self-enterprise is destroyed, not much will have been accomplished. The individual citizen must have better lessons in doing for himself.

Going back to the philanthropic organizations, can you think of any better example of the good neighbor policy than the work of the Rockefeller Foundation? Beginning in 1909 with a program to eradicate hookworm disease in the Southern states, a program which proved a tremendous impetus to public health development, its activities had spread in 1942 to twenty-nine different countries. Were it not for the war, there would be an even greater representation, exactly twice this number having been assisted up to 1940. Its aim has been from the beginning "the promotion of public sanitation and the spread of the knowledge of scientific medicine with the world as its field." The way it carried the fight against hookworm to infected countries all over the world; how it helped to develop departments of health and sanitation in forty-one countries and to establish eighteen schools and institutes of hygiene and public health in various parts of the world; how it has made war on yellow fever and malaria; and similar problems it has pushed toward solution, are all well known to you. Wartime emphasis has caused the International Health Division to intensify its efforts in the field of nutrition, immunization and disease control. Production of yellow fever vaccine for immunization of the armed forces, increasing search for a more effective influenza vaccine, intensification of studies of typhus fever and its vector, are among its more important wartime activities.

I think there is a good lesson for us in all of this as we contemplate the close of the war and realize that there will be a world in which all nations and all peoples will be thrown closer together than ever before, wherein there must be a new kind of cooperative life if civilization is to make progress. We must not assume an attitude of despair over the inequalities which result from poverty, disease, and the many other conditions which threaten the security of mankind. Rather, let us concentrate our energies upon the positive aspects of living, making whatever contribution we can to the full development of man's potentialities. Obstacles are ahead of us, to be sure, but then nearly all genuinely great accomplishments have come when things seemed darkest.

Without doubt, public health and medicine stand at the threshold of new and unlimited opportunities. Progress has been rapid in chemotherapy, nutrition, and in all branches of medicine and public health, so rapid that we have hardly begun to apply this great knowledge. Before we can hope to do so, the vast facilities of the medical, dental, nursing and allied professions must be utilized to the fullest extent and a broad program formulated which will be one of participation and earnest cooperation on the part of physicians, public health workers and others. And of course, let us not forget the individual citizen who must have a larger personal responsibility for putting to work this vast knowledge on health practices if he is to fulfill his obligations to himself and to those who live about him.

It has been said that

"any attempt to keep the hand of the past on the pulse of the future, to solve the problems of tomorrow with the mechanisms of yesterday can, at best, be only indifferently successful."*

Without change to meet new and mounting needs, there can be little progress, and we must be constantly on guard to prevent becoming rigid and self-complacent if we would reap the fullest harvest from our efforts. Stagnation and death await ideas and systems which have lost their power to grow.

As we look about us and see the vast amounts of illnesses which are preventable and the great number of physical defects which could be corrected, we stop and ask "why" these conditions should prevail in a world where medical resources and knowledge are abundant. Surely the means will be found eventually to translate this knowledge into something tangible, giving a new and happy meaning to living for many who have never really tasted the joy and freedom it affords, and gaining for ourselves more of that satisfaction which comes from serving.

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*Rockefeller, John D., Jr.: Remarks at the meeting of the Rockefeller Foundation, April 3, 1940.

IS THERE AN ANXIETY COMPONENT TO EVERY COMPLAINT?*

By SPAFFORD ACKERLY, M.D.†
Louisville, Kentucky

To the four freedoms of democracy, let us add a fifth, freedom from ignorance and superstition; a sixth, freedom from mental, physical and emotional crippling in the early years; and yet a seventh, freedom to be an individual. Only in so far as society can respect the individual and his differences can the individual in turn respect and willingly become a supporting part of that society. The physician is interested in the differences in individuals, the sociologist in the differences in groups, the statesman in the differences among nations.

When the personality of one individual, group or nation grates upon another, unrest and anxiety creep in. This is a human reaction. The fluid personality is likely to be threatened by the rigid one, the warm by the cold, the ceremonious by the unceremonious, the outgoing and dominant by the retiring and shut-in, the secure by the insecure, the have's by the have-nots, and vice versa. These things do exist where people are concerned, regardless of status. They exist in doctors. They exist in the patient. However, since earliest times the doctor is expected to be all things to all men. Therefore, the goal of every physician is to endeavor to live up to this expectation. To the extent that the patient feels that the doctor understands him as an individual, to that extent the physician is able to allay his patient's anxieties. By so doing the physician can use his skill more effectively to assist the curative resources of the organism. This is the art as well as the business of medicine.

It is common knowledge that the body cannot put up the kind of fight in the presence of excessive mental tension and anxiety that it can without it. Most illness is normally accompanied by some degree of anxiety, the successful handling of which is different for each person according to his background, temperament, education, life experiences, and social and ethical proclivities. To eradicate the fear of the unknown in one, to satisfy the thirst for the truth in another, to bolster the will to live in a third, these things are the result of painstaking consideration of the patient as a person, not merely chart number so-and-so with a certain diagnosis on it. Such services cannot be itemized in the business office of the hospital.

The task of the physician is indeed a far-reaching one. He must handle not only the conscious anxiety that is expressed openly by his patient, whether that anxiety is occasioned by acute illness or by a life situation that the patient is trying to grapple with, but he must also handle the unconscious anxieties of a large number of patients who complain only of aches and pains of the body, not of aches and pains in the mind. These latter complaints are the most difficult of all to deal with.

He also sees patients with forceful drives that are being utilized in a number of compulsive ways. In some it is an obsession for work and independent accomplishment. These patients, too, may be surprisingly free from conscious mental anxiety and only seek medical attention when they develop somatic symptoms, as for instance, upper gastro-intestinal distress. The physician must not only distinguish the pure benign anxiety states which readily respond to treatment from those more resistant, the neurasthenias, hypochondrias, and hysterias in which the patient is not actively and anxiously grappling with the real problems inside and outside himself, but he must also ever be on his guard not to confuse these psychoneurotic states with true mood disorders grouped loosely together under the term depressions. Mild depressions often bring out psychoneurotic tendencies which clear up when the depression lifts. All depressed persons are anxious, but all anxious persons are not depressed.

Furthermore, he must recognize the fact that it is not uncommon to have schizophrenia make its early appearance with somatic symptoms that may be passed over lightly as psychoneurotic.

Finally, he comes to recognize that few mental conditions are absolutely malignant and irreversible. Many patients are diagnosed schizophrenia because the symptoms at the time only seem more prominent. But on careful observation one often sees a predominance of the benign anxiety and depressive features.

Diagnostic labels are, of course, nothing more than shorthand symbols which we all must know if we are to talk the same language, but in practice we are interested only in one thing

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and that is the healthy or unhealthy functioning of the organism, and what to do about it. It is the responsibility of the physician to know how the total organism is operating on all levels.

Anxiety is as much a part of the normal functioning of man's brain as blood pressure is a part of the cardiovascular system. Anxiety, too, has an average range. So do the moods of man. It is important to know the range of normal anxiety and when the tensions arising therefrom are pathologically high or low in a given individual. Without anxious concern over the present and future there could be no civilization as we know it. Dearth of anxiety in any individual or group denotes a breakdown of civilization which only came into existence because of man's increasing ability through practice to deal with the future without neglecting the present. Kipling's description of man in his immortal poem "IF" would give anyone anxious concern, or as Webster defines it "painful uneasiness of mind," while struggling to reach that high performance of appropriate and effective behavior. Such concern can arise only from the exercise and interplay of all of man's evolutionary endowments. This is man's road to well being. When the pathways between the thalamus and the frontal lobes are severed, or when the frontal lobes themselves are damaged as in paresis, or destroyed by tumor, the loss of awareness of total situations narrows the field for anxious concern and accomplishment.

Anxiety is one of man's important weapons in his search for progress in dealing with the frustrations that beset him in his upward ascent. As physicians, therefore, we are interested in the question of what price man pays for the exercise of these higher centers in meeting the demands of civilized living. We are also interested in the ways and means that man avoids this "painful uneasiness of 'mind'" that arises when the individual feels at a disadvantage in coping with his total life situation successfully.

Some persons seem to hold to their adolescent concepts of conventional living with a vengeance as though it were their only claim to superiority here on earth and a straight ticket to heaven. They are often compulsive routinists living on inadequate diets of work, home, slippers, bed. Other wives in the neighborhood may point out such exemplary conduct to their own husbands, little realizing what a feeble example of healthy organismic living it is. These individuals are often run down, anemic, poor eaters, and poor sleepers, but they seem to have unlimited endurance and do accomplish things. One wonders how long they can keep it up, what keeps them going, and what they are getting out of it. Indeed, sooner or later (usually later in middle life), they begin to ask themselves these questions and not long after that begin to reap the tragic reward called an agitated depression or involutional melancholia. Obviously there has been no avoidance of anxiety in these lives. Their way of life has been a "painful uneasiness of 'mind.'" Here anxiety has dug a deep rut for itself, mobilizing and fixing tension in the organism that requires the most drastic organismal shake-up to loosen it before relaxation and recuperation are possible. (Incidentally, here is where the most dramatic results of electric shock therapy are encountered.)

Another example of the price man pays is seen in the chronic tension states often associated with upper gastro-intestinal distress. They are found in great numbers in the service where men have been subjected to long periods of combat. We also know the type of tense, high strung, go-getter, independent business man well depicted by Alvarez and others. The success they enjoy from their labors very probably keeps them up and helps prevent the misery of excessive mental anxiety. But why these active individuals are unable to relax their autonomic nervous systems, thereby helping to alleviate their gastric complaints, is not readily understood. It is conceivable that if soldiers at the front could carry out their normal emotional impulses in active striate-muscular escape from danger, such tensions might be released. Until we definitely know what emotions are being denied proper psychobiological expression, treatment of the so-called gastric neuroses will continue to be largely symptomatic. Such conditions should not be confused with the gastric and other hypochondriacal complaints of the typical psychoneurotic. The mechanisms behind their complaints are quite different.

Let us now turn to a consideration of the ways and means that man employs to lessen tension and anxiety or avoid it altogether. Here we see the blessing of a good sense of humor. A tense situation is often relieved by a joke, a bromide to pain. He who dares to face and learns to live comfortably with his strong drives and wishes is not liable to develop anxiety rut formations. Conviviality with food, drink and music; that secure feeling of belonging, not on the fringe of things, especially in the early years, but well inside the door, a

place in one's own chair by the fireside in any group; hobbies; change of scene; a bit of adventure; athletics; the protective influence of idealism on the powerful instincts especially in youth; complete psychophysical releases of the mature organism in physical contact and union; ventilation and effective use of the little feelings of anger and indignation that arise in the course of the busy day; taking time to appreciate the grains of gold in the dross: all these play a part in lessening tension.

Somatic illness itself often times diminishes anxiety. It is surprising how free from mental stress the average tuberculosis sanatorium patient is. It is also a common observation that there is much less mental stress (wrongfully called shell shock) among the wounded than among able-bodied soldiers at the front.

On the other hand, somatic complaints in which there is little known pathology involved abound in every physician's practice. This is the group frequently referred to as psychoneurotic. Here certainly is painful uneasiness of body, but we rarely see the same degree of painful uneasiness of "mind." (That exists mostly in the mind of the attending physician.)

An unhappy, frustrated mother became a chronic, bedridden invalid during which time she experienced the first peace of mind she had had for years. When the doctor finally admitted he had exhausted every known medical remedy in her behalf, she became mentally distressed and shortly thereafter committed suicide.

A young lady in mental anguish over an unfaithful lover suddenly developed hemiplegia on the night she contemplated doing him harm and so long as the hemiplegia lasted she was mentally at ease with herself and the world. Here we see the dramatic conversion of psychic stress to the voluntary neuromuscular system.

An insurance company once did for a hypochondriacal young man what my own treatment had failed to do. The young man who had been convinced for several years that he had heart trouble decided to have a showdown with the medical profession over his heart condition by applying for a $10,000 life insurance policy. He got it, much to his surprise. Two weeks later he came in to tell me he had no further leg to stand on in favor of his heart disease. The insurance company had taken care of that completely. I asked him if he were happy about it and he replied, "I have never experienced such mental torture in my life. I wish I had my heart trouble back." This was the beginning of real improvement.

Here we see a case in which it appears that "painful uneasiness of body" motivated the patient to seek nothing but bodily remedies, but when he was seized with "painful anxiety of mind" that apparently motivated him to grapple with his larger and more complex problems, obvious to the physician but previously obscure to the patient. The real struggle for adjustment begins here. It is then that the application of the fine art of supportive treatment is effective in the process of rehabilitation.

Therefore, when one tries to ask himself the question is there an anxiety component to every complaint, it is obvious that one cannot always see anxiety in the complaint itself as presented by the patient. But if we leave it there we might miss the whole significance of the patient's real trouble. While one patient may dread the slightest illness because of pride in perfect health and physique, another may welcome an appendectomy as an escape from intolerable conflict. One must not only know the external setting of which the complaint is but a part, but he must also know something about the inner stresses and strains that make it difficult for the patient to cope effectively with that setting. Love and hate can consume us; aggression, submissiveness, sex and exhibitionism can dominate us; fierce inhibitions can strangle us. All these things can cause unhealthy functioning of the organism.

In brief, when the patient's knowledge and fortitude can be advanced to the point of knowing and facing the things that are "bullying" him, so to speak, many of his mental and physical complaints will be swallowed up in an active struggle for freedom: freedom to acknowledge and be proud of the personal possession of those strong forces biologically healthy in themselves, but like dangerous weapons, unhealthy when concealed, and freedom of opportunity for the effective utilization of these forces for a more lasting peace in internal as well as external affairs.

DISCUSSION

(Questions and Answers)

Question.—Dr. Ackerly mentioned agitated depression and involutional melancholia in connection with the electric shock treatment. I wonder if it is his opinion that the mechanism is analogous with lobectomy, the one being physiological and the other anatomical?

Dr. Ackerly.—I do not know how to answer that. I am hoping someone will try to before long. Until then it is mostly speculation. One might say that it seems as though in electric shock treatment the block to traffic is blown up. In lobectomy the traffic arteries are blocked by cutting. Both accomplish some of the same things, but not all things. Both may produce relaxation and the patient can eat and sleep better. In shock treatment it looks as though the individual is forced to live in the present temporarily at least and cannot remember the past. In frontal lobotomy he also lives in the present and he can remember the past, but does not care. In lobectomy the cables from the battery generating anxiety, so to speak, are severed. In electric shock the cables are there and the over-charged battery has discharged itself. The individual is then occupied psycho-biologically with the process of re-charging, thus beginning the more healthy anabolic functions. In both instances one's total picture is narrowed down so that he has less frustrating stimuli to deal with.

I have had personal experience with electric shock treatment, but none with bilateral therapeutic lobotomies. However, Dr. Freeman was kind enough to drive me around to see some of his lobotomy cases several years ago.

Question.—I would like to ask Dr. Ackerly to tell us what psychological effect electric shock has on these cases?

Dr. Ackerly.—I take it that you mean the psychological effect on involutional melancholia. As we all know, it has the most miraculously dramatic effect. We are now studying the relapses in a series of two hundred cases of all sorts, though a large percentage are involutional melancholia. When a patient wakes up completely and is again thrust into a very distressing environmental milieu, electric shock will not carry him through this. He needs something else, treatment of the factors within and without and their dynamic interrelations. What is also amazing is the sudden alleviation of the terrific guilt and the self-punishing and self-accusatory trends that so often lead to suicide. The patient's mood is lifted, so to speak, into the normal range. I cannot explain it.

Question.—Is an electroencephalogram made before and after?

Dr. Ackerly.—In some cases an electroencephalogram was made before and after treatment. I would like to ask Dr. Landis to discuss that. He is in charge of our electroencephalographic department.

Dr. Edward E. Landis, Louisville, Ky.—Dr. Hughes and Dr. Wigton, of Pennsylvania Hospital, did considerable work in evaluating by electroencephalography the effect of electric shock therapy on the brain wave. From their work there seemed to be a definite correlation between the number of treatments given within a certain time and the persistence of abnormal waves after treatment. This abnormality may persist six weeks, rarely longer, and is often concomitant with memory disturbances. I have never seen permanent memory disturbances from electric shock.

Question.—I would like to ask the mortality rate in the electric shock treatment.

Dr. Ackerly.—Dr. Lawrence Kolb's report gave excellent tables of the complications including death rates in insulin, metrazol and electric shock. I think there were over seven thousand patients.

We have treated around two hundred patients without any mortality.

SOME GENERAL REMARKS ON THE PREVENTION OF IRRITATION AND SENSITIZATION OF THE SKIN TO CHEMICAL COMPOUNDS*

By LEON GOLDMAN, M. D.
Cincinnati, Ohio

Such a vast and inclusive subject will be considered only in brief outline in order to emphasize some practical recommendations. "Irritation" and "sensitization" are mentioned separately because often these two are distinct processes, the former causing initial and continued irritation of the surface of the skin on repeated contact, and the latter mechanism causing lesions of the skin only after a period of often silent or subclinical sensitization. These separate terms are used to emphasize that protection must be secured also against contact with substances which seem harmless on initial exposure. Osborne[1] and Baer[2] have defined these terms at a recent conference. Anderson[3] believes the differences to be essentially quantitative, although basically all materials, especially in industrial medicine, are toxic. For practical purposes, the terms "irritation" and "sensitization" should be retained. Substances vary in their ability to sensitize the skin. Records are being kept of materials, especially in the industrial process, as to their property of high or low sensitivity index. This report is concerned with protection primarily against chemical agents of all types. Of course, protection against animal parasites, bacteria and virus infections may follow some of the principles listed.

The demands of this war for the maintenance of the efficiency of the cutaneous barrier have exposed our lack of real knowledge of basic physiology of the skin. Such dermato-physiologists as Rothman, Cornbleet, Blank and Pillsbury and his associates have contributed much. Interest of non-dermatologists[4] in physiology

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*From the Department of Dermatology and Syphilology of the College of Medicine of the University of Cincinnati.

is centered chiefly in re-examination of the role of the skin in the regulation of body temperature. This lack of knowledge of cutaneous physiology is felt keenly when we try to offer practical advice, without too much loss of time from trial-and-error methods, for the demands of industry in regard to the all-important problem of industrial dermatoses, for the demands of the military in regard to protection of the skin from the chemical warfare agents[5] and for the general public for the protection from the primary irritants and eczematogenic or sensitizing agents of every day life.

No trade, profession, or any type of working group is free from the danger of cutaneous reactions caused directly or indirectly from its work. One of the most difficult problems in dermatologic practice is the therapy of a dermatitis of the hands. Stokes[6] has indicated this recently in his review of dermatitis of the physicians' hands. In addition to these, the general practitioner should be interested also because he is usually the first physician to see the dermatitis of the housewife. With the problems of help in the kitchen and the disturbed emotional pattern of the modern young family group we are seeing more and more dermatitis of the hands of young and inexperienced housewives and it has become difficult to control. The necessity for setting up a household, the lack of domestic help, the consequent inexperienced and close and repeated contacts with detergents of all types, food preparations, house cleaning, and the psychogenic disturbances of fear, anxiety of her husband's absence in the military service, all these make for persistent and even chronic intractable dermatitis, especially of the hands.

This subject of protection of the skin should be of value to the pediatrician also because of his work with infantile eczema, for even with some forms of endogenous allergy, contact lesions of the skin may complicate the picture. In infantile eczema such local factors as the drooling of saliva, and the regurgitation of gastric contents about the chin and cheeks, the irritations of toys, soaps, rough clothing, urine, and so on, may complicate or even initiate the cutaneous phase.

This prophylaxis routine concerns the neuropsychiatrist because of his interest in all types of psychosomatic cutaneous reactions. In patients with disturbed emotional patterns, the slightest form of dermatitis will make them keenly aware of their skin and so transform this dermatitis into a secondary neurodermatitis or other types of psychosomatic cutaneous reactions. Therefore, efforts should be made to protect at least that organ related closely to nervous system, namely the skin.

One must remember that the cutaneous surface is not simply a dull lifeless indifferent protective coating, but a living tissue undergoing active keratinization all the time, studded with openings of follicles and sweat glands, and covered all over by a layer, essentially, of water, proteins, lipid materials, and salts. This surface has a definite acid reaction. We recognize that this organ must assist not only in heat regulation, excretion, and vitamin production, but must also try to withstand bacterial and virus infections, also try to minimize direct physical irritation of all types and must endeavor to prevent becoming sensitized by materials which do not cause recognizable primary or initial irritation of its structure. There are also different basic constitutional types of skin, varying from the very dry, ichthyotic forms to the very greasy seborrheic types. These different anatomical types are usually congenital, but may be acquired also. In addition, individuals, of course, may have congenital differences in the varied physiologic responses of their skin.

There are obviously, two general methods to protect the skin. One is to reinforce it physiologically, as it were, by systemic aides, and the other or exogenous approach is to attempt to keep the agent from or to minimize its contact with the cutaneous layer.

I should like to consider first the systemic phase since we know little of this. Of many possible factors, the following are listed as having some connection with this problem:

(1) Vitamins: specific types? polyvitamin mixtures?

(2) Endocrines? as affecting essentially skin "texture" and vasomotor disturbances.

(3) Adrenergic and cholinergic drugs, chiefly as affecting the dermatitides of the hands and feet.

(4) Ionic ratios in the skin, especially Ca, K, S, Mg, Cl, and P (or P_2O_5).

Such basic biochemical and physiologic disturbances may be manifested in general by such clinical responses as:

(1) Cutaneous allergic phenomena, especially of the contact type.

(2) Disturbances of peripheral blood flow, especially of the extremities, with increased activity of sweat and sebaceous glands. These disturbances may arise from central stimuli (emotional, vasomotor center (?) changes) or from exogenous environmental factors, such as heat and humidity.

(3) Fixed type of structural changes in the skin such as dryness of varying degree, seborrheic dermatitis syndromes, follicular keratinization, pigment variation or other types of color changes of the skin.

(4) Miscellaneous factors, probably chiefly physiologic, as affecting the fluid layer on the cutaneous surface, changes in pH of the cutaneous surface, all without recognizable anatomical changes in the constitutional types of skin.

The value of an adequate diet in regard to resistance of the skin to irritation and sensitization is unquestioned. If there is a definite nutritional deficiency then dietary therapy will help. If there is no evidence of any nutritional deficiency then dietary therapy, including vitamin mixtures, will not be of any great help. So when vitamin A in large doses is used for disturbances of keratinization, and when B complex mixtures are used for seborrheic lesions and other types of dermatitis, and vitamins C, K, and P for hemorrhagic tendencies, and no marked improvement occurs, then one should not be surprised. Without real clinical proof as to its value in the prevention of dermatitis, vitamin C has often been recommended. When there is actual loss of vitamin C (proof?) in the sweat through excessive perspiration, then that is an indication for the addition of vitamin C. However, from the viewpoint of medical practice, polyvitamin mixtures may be employed in adequate dosage under the above circumstances and if anatomic or physiologic changes occur, then the cutaneous barrier may be strengthened. Since this report is concerned with the protection against chemical compounds, the value of other dietary factors is even less clear. It is not known whether high carbohydrate diet, supposed to protect the liver, will protect or predispose to chemical irritation although it is said to predispose to coccal infection (Stokes). Although choline feeding (soybean lecithin) has been suggested for visceral protection on exposure to toxic materials, there is no proof, as yet, of its value in protection of the skin. Schwartz[7] believed the dietary influence on the pH of sweat may be of value for neutralizing substances which a workman contacts.

The value of endocrines is even less clear. If these agents truly affect textures of the skin, then they may be of value for those individuals who clearly need endocrine therapy. This will include estrogens for women with menopause disturbances and androgens for men in the male climacteric. According to the work of Herrmann and McGrath,[8] estrogens may be of value in vasomotor disturbances.

This introduces the phase of vasomotor changes in the extremities and these changes are important because of the great frequency of dermatitis of the hands. Adrenergic and cholinergic nerves are concerned here. Grant, Pearson's and Comeau's[9] work on the relationship of acetylcholine with urticaria has not been applied to contact allergy or to primary irritation of the skin. In a small series of psychoneurotic patients, it has been shown[10] that acetyl-beta-methylcholine chloride (mecholyl) does aggravate cheiropompholyx, a peculiar type of vesicular dermatitis of the hands of endogenous origin. "Autonomic instability" has been mentioned by Lindemann and Finesinger[11] in a study of forty psychoneurotic patients. This type of vasomotor disturbance is synonymous with the "neurocirculatory instability" of Becker. In his study of varied types of dermatitis of the hands, Stokes[6] also considers functional disturbances to be of great importance. In such types of individuals adrenergic drugs may be of value in an attempt to minimize this "autonomic instability" which serves to reduce the efficiency of the cutaneous barrier of the hands at least. Atropine or derivatives of this may be used. This drug is of more value when combined with sedatives.

Mixed with all these factors are those making for changes in calcium, potassium, silicon, magnesium, chlorine, and phosphorus in the skin. Increase in Ca, P, or calcium, phosphorus, or phosphate and perhaps magnesium and silicon, are supposed to be associated with decreased irritability of the skin, more often in animal experimentation. Whether this is true also for the prevention of irritation and sensitization in man as regards contact chemical compounds is not known. If an adequate diet does not supply these then they can be added to the dietary regime. Burckhardt[12] reported that damage to the skin from alkalies, especially alkali soaps, predisposed to sensitization of the skin. He considered the neutralization of alkali to be a function of the epidermal cells themselves. Our attempts[13] to detect this impairment of neutralization by means of his recommended alkali neutralization curves were unsuccessful even with some modification of his method. Stokes[6] mentions in addition, such general factors as alcohol intake (vasodilatation and congestion) and allergen contact as being aggravating factors. In addition to non-allergic diet in food allergy individuals, he recommends hydrochloric acid and pepsin by mouth, an acid

ash diet, when high alkaline ash food may be suspected of causing hydration of the skin. Hyperpyrexia has been used in animals to prevent sensitization of the skin to turpentine. In a few patients under hyperpyrexia induced by the Kettering-Simpson-Sittler hypertherm, it was noted that the intensity of a positive patch test reaction was not affected.[14] In addition, the usual general measures of autohemotherapy, histaminase (active preparation?) and the appropriate therapy of any visceral disease should be considered. Massage of uninvolved cutaneous areas, baths, ultra-violet radiations and such general measures may also be used.

In an effort to prevent damage to the skin in industrial medicine it is sometimes possible to fit the type of skin to the job. For the "wet job," such as oils, greases, wax, the individual with fair color, dry type of skin is concerned. For the "dry job," such as concerns solvents, alkalies, filing and chipping, the individual with seborrheic type of skin is preferred. In jobs with substances of high sensitivity index such as turpentine, formaldehyde, nitro compounds and synthetic dyes, the workman without epidermophytides, without previous episodes of contact dermatitis, and the negro should be used because his skin is less easy to sensitize.

Also to prevent the subsequent development of dermatitis, prophylactic cutaneous testing is employed sometimes when a new applicant for the job is considered or when he is to be changed from one department to another or when a manufacturing process is changed. Schwartz[15] advises against pre-employment patch testing because of the lack of contact of the individual with the substances to be tested, and also because of possible medicolegal factors if a patch test does become positive and the man is not hired. We have found this method of value chiefly in inter-departmental changes and in process changes as mentioned above. We do believe also that in processes with highly sensitizing materials, an individual with previous episodes of contact dermatitis should not be employed, or if this is not possible, he should be employed only if his cutaneous tests are negative. This method of prophylactic testing does not, of course, guarantee that an individual with negative tests will not develop later dermatitis from the materials, but at least this procedure will eliminate rapidly the workman who is potentially sensitive or who has a polyvalent sensitivity or who may become sensitized easily. With any of these theoretical possibilities, or with a history suspicious of previous episodes of contact dermatitis, that individual is not a good candidate for the job, especially if the compounds belong to the groups of high sensitivity index. The technic of cutaneous testing varies, of course, with the kind of compounds to be tested. Unless the physician is familiar with the technic and interpretation of these tests he should train himself by using adequate controls before offering conclusions.[16] Prophylactic testing can be done even to vapors and to irritants. Some of these tests include:

(1) The typical patch test
  (a) Ordinary or closed form
  (b) Visible form
    (1) Cellophane window
    (2) Shield type of Brown
    (3) Perforated celluloid disc of Rattner
    (4) Slide method modified after Guild
(2) Uncovered contact tests, recommended especially for irritants or unknown substances
  (a) Pipette method of Wedroff
  (b) Cork method of Shelmire and Black, chiefly for plant oleoresins
  (c) Glass rod contact
  (d) Rubbing method
(3) Cutaneous testing methods for vapors
  (a) Test tube technic of Machle and Zwick
  (b) Chamber method of Miescher
  (c) Test tube-water bath method
  (d) Chamber method of Rokstad[17]
  (e) The standardized chamber method of McNary[18]
(4) For mixed endogenous and exogenous factors dusts, animal emanations, etc.
  (a) Scratch tests
  (b) Intradermal tests, preferred

Lists of concentrations of materials and their appropriate vehicles for testing may be consulted to facilitate testing. For those interested in this field the extensive publications of Sulzberger[19] and Schwartz[20] are offered.

In regard to hypersensitivity to chemical compounds it is not possible from a practical aspect to attempt to desensitize or hyposensitize by methods similar to those employed in the hay fever-asthma-urticaria complexes. That this is not entirely impossible may be judged by present experiments on hyposensitization to plant oleoresins stimulated by the recent work of Shelmire.[21,22] Moreover, the animal sensitization experiments to chemical compounds, of Sulzberger and Baer[23] and Landsteiner[24] and his workers suggest also hope for subsequent work on the reverse phase. Even elimination of the

sensitizing materials for long periods of time does not assure desensitization of an individual. This has been demonstrated conclusively for turpentine.

There is another method of great practical value to prevent skin lesions in industry. This is the common practice to "toughen the skin" as it were by repeatedly working with the materials. If the dermatitis episodes are minimal and do not become explosive and overwhelming, these episodes may soon become quiescent and then disappear completely as the individual becomes "desensitized." It is unfortunate that the mechanism of this reaction has not been studied more carefully, by either crude statistical analysis or by actual investigative procedures. This "toughening" process is fortunately more common than one supposes and the truly hypersensitive individual, who becomes increasingly so, is much less common.

In regard to external factors which may prevent chemical compounds from irritating or sensitizing the skin the following devices may be used:

(1) Individual protective measures
  (a) Protective clothing
    (1) Complete
    (2) Partial
  (b) Protective creams, lotions, films, etc.
  (c) Detergent materials
  (d) The use of intermediate instruments to prevent contact with the hands especially
  (e) The use of detector materials to indicate presence or absence of contact agent
(2) Collective protective measures which are essentially those of principles of safety control engineering methods
  (a) Protective devices on machines or utensils to prevent or minimize contact with the skin
  (b) General cleanliness of the tools, instruments, and work area
  (c) Ventilation control measures
  (d) For industrial medicine the adoption of a definite program emphasizing the preventive aspects of industrial medicine.

From a theoretical standpoint it may be ideal for each individual to have such complete protection of the skin that under no circumstances could chemical compounds reach any portion of the cutaneous surface of the individual. The best illustration of this is in the field of chemical warfare protection for the individual by means of special uniforms covering the entire body.[5]

These uniforms may be made of impervious materials such as oil skins or made of ordinary clothing materials impregnated with chemicals. There is also the much less efficient individual protective cover of a cellophane type. This is used chiefly for emergency protection against liquid vesicants sprayed from the air and to prevent some contamination of clothing. In industry, the complete jumper or coverall type of arrangement together with complete changes of underwear are illustrations of this form. It is obvious that all such types of complete costumes interfere with the heat regulation mechanism of the body and the individual soon becomes very uncomfortable and his working capacity is reduced. Study continues on the difficult problem of attempting to "air condition" these complete coverings. Yet under certain circumstances the complete body covering may be the only type of costume which can be used. These costumes are similar, in principle, to the costumes that medical attendants wear in tick infected areas and in the care and treatment of plague and typhus cases. One must remember that when these complete protection clothing devices are used, as the type may be, they must be cleansed, decontaminated or even discarded when contaminated heavily by chemical warfare agents. In industry, and in the home, protective costumes become dirty and therefore no longer protective. In the industrial plant, such dirty work clothing should be laundered at very frequent intervals, and it is found that the cleansing process should be the responsibility of the plant, otherwise the clothing will not be laundered often enough. This factor of frequent changes of clean clothing is a very important one.

To adopt a more practical form of costume so that it should not be as uncomfortable as the complete costume, and to protect only those areas of cutaneous surface immediately concerned, various forms of partial protection such as caps for the head and scalp, visors to the face, transparent plastic eye shields, clothing to protect the anterior part of the body in the form of aprons, either in one piece or in a more comfortable form, split for covering each leg, sleevelets, boots for the feet and various types of glove combinations for the hands are used. These materials with the exception of the gloves may be made out of any type of cloth and may be made transparent and resistant to various types of material and even to fire. They may be made out of certain types of non-inflammable laminated cellophane, synthetic rubber, rubber materials, cloths covered with synthetic resins, etc. For practical individual protection against

chemical warfare agents in the field the medical corps can wear a protective apron, a covering in one piece, ankle length and very similar to the operating gown. This is made of cotton rayon with a coating of synthetic resin. Even with these devises for partial protection there is some local interference with heat loss. In certain types of sleevelets this is remedied by having ventilation vents in the upper part. This heating and humidity combination is an important one in the prevention of skin irritation because the increased heat is associated with increased sweating of the skin surface and this often makes for better contact and better absorption of the chemical compounds. An example of this is the increased frequency of nickel dermatitis in hot, humid environments. In the case of protection of the hands by gloves, the problem is much more difficult because when the work demands heavy type of gloves, then these gloves, whether they are made of asbestos, leather, rubber, or synthetic rubber or impregnated cloth, will not stand up very well and the gloves are usually expensive. Any type of complete glove covering is uncomfortable and hot. Frequently this discomfort may be reduced to some extent by wearing an inner glove of soft cotton material which will absorb some of the moisture. Still, the gloves must be changed at frequent intervals. Schwartz,[15] who has done much excellent pioneering work in the field of protection, recommends gloves without seams so that no friction irritation will occur. When leather gloves are indicated, the chamois form is preferred. Synthetic rubber gloves may be used for those individuals sensitive to rubber. It is

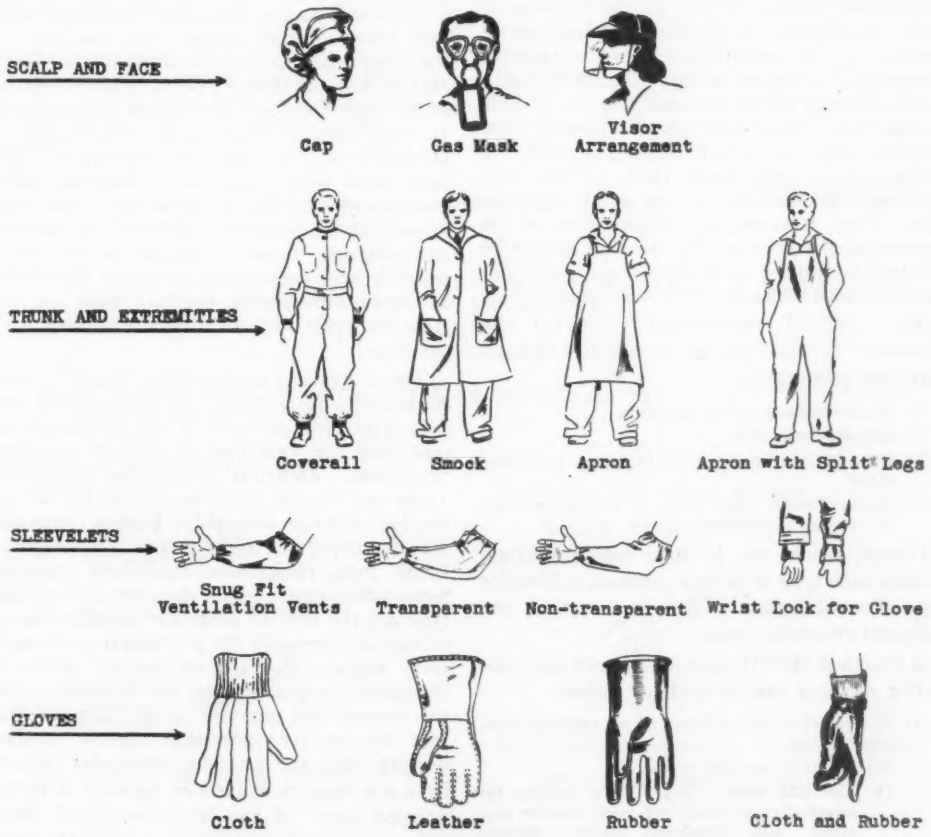

Fig. 1
Some types of partial protection to the skin.

important to remember that when a dermatitis of the hands does develop, then any type of glove becomes uncomfortable and is able to cause spread of the dermatitis. After use of any one of these partial protective devices, it should be cleansed or decontaminated as the case may be, otherwise it will lose its protective value. To attempt to minimize some of the effects of immersion foot, socks impregnated with lanolin mixtures have been recommended.

A convenient type of device for protection to the skin and one which is abused all too frequently is the protective cream or mixture combination. When creams are used, the workmen tend to place too much reliance in the creams and too little in the much more important general protective measures. The development of the protective cream idea is due chiefly to the work of Schwartz,[25] Director of the Dermatoses Investigations Section of the Division of Industrial Hygiene of the National Institute of Health, and his associates. These mixtures of ointments or creams, lotions, film, interpose a barrier through which materials will not be able to penetrate. They may contain chemical compounds which will react chemically with the contact agents and change them so that they will react less strongly or not at all with the skin. These mixtures may relieve some of the dryness of the skin so that the skin cannot be defatted or injured as easily by the particular materials with which the individual works.

The essential requirements listed by Schwartz[25] for these protective mixtures demand that these mixtures be:

(1) Non-irritating and non-sensitizing
(2) Actually protective
(3) Of such consistency so that they may be applied easily
(4) Removed easily after work, let remain on while the worker is exposed.

Creams should not be used indiscriminately because each type of contact demands a different type of combination. There is as yet no one universal protective cream.

A practical classification of present day protective mixtures can be made as follows:

(1) Non-reactive barrier types whose essential components are:
  (a) Lipids of varying types
  (b) Colloidal elastic films. These include the so-called glove types and many contain paraffins, wax, celluloses, shellac, silicates, soaps, mastic, tragacanth, acacia, casein, benzoin, rubber and even the plastics, although most of the plastics are good sensitizers
  (c) Powders, such as clays (kaolin, bentonite, elkonite), zinc oxide, iron oxide and titanium dioxide.
(2) Chemically reactive types, usually for the following types of reactions. Almost any type of reaction that will not harm the skin may occur.
  (a) Acid-alkali neutralization reaction
  (b) Oxidation-reduction reactions
  (c) Precipitation reactions
  (d) Hydrolysis
(3) Mixtures of any of the above

Great improvements have been and are being made in these protective mixtures especially through the needs of the Chemical Warfare Service and other branches of the military services and industrial medicine. Recent developments concern types of creams which can be applied easily, are stable and which will penetrate deeply into the skin and so react with substances which have been absorbed already into the skin. In the future then, creams or other mixtures probably will be available against plant irritations of the poison ivy and poison oak group in spite of the recent discouraging experiments of Howell.[26] In this connection experiments have been made with stable active mixtures of the zinc peroxides and urea peroxides. The value of peroxides is such that they may be used also as therapeutic agents to reduce the intensity of pruritus and to prevent secondary infection if a venenata then does occur. These are only some examples of a field which remains to be developed.

This important method of protection, which Anderson[3] aptly names as the chemical antidote type, promises to be a very important concept from the viewpoint of dynamic cutaneous protection. Anderson[3] himself has suggested a 1 per cent copper sulphate solution for the prevention of match dermatitis. Copper compounds are used at present in the therapy of phosphorus burns from phosphorus incendiary materials. Some other examples of the chemical antidote type are the uses of acids and alkalies, the use of sodium hydroxide for prevention of irritation from rubber, the use of sodium sulfite for chromium compounds and the excellent protective creams and mixtures of the Chemical Warfare Service for protection against mustard, lewisite, and the nitrogen mustards. Creams have also been recommended recently to protect exposed areas of the skin from flash burns. Whenever a protective cream is used, the hands should be cleansed before the cream is applied

and the cream should be removed after the contact period is over. In general, then, the practical recommendations in the field of protective chemical mixtures include the following:

(1) General indications to attempt to correct varying degrees of irritation (defatting, distortion, pH changes) produced by the use or abuse of various types of detergents, for this group use non-reactive barrier types whose essential components are lipid materials.

(2) For a specific process, study the process thoroughly and determine whether the non-reactive or reactive barrier type is indicated and choose the exact form of each according to reports in the literature or by a critical trial of your own.

(3) Learn and teach the method of application.

(4) Even after all this, do not depend too much on this form of protection.

One of the important parts in the protective program against contact injury of the skin from chemicals is the principle of cleanliness obtained through the use of detergent materials. The efficacy of the cutaneous barrier may be reduced by detergents through changing of its pH, its lipid content and through causing distortion and separation of superficial layers, etc. "The pathogenesis of a dermatitis from the use of soap is not yet clearly understood."[28] Much work has been done to attempt to minimize the effects of the detergents on the skin and at the same time to keep up the cutaneous cleansing properties. Strong cleansing soaps and organic solvents used as cleansers have caused much damage to the skin. It is difficult to dissuade individuals from using these irritants because they get rapid initial cleansing of the skin. Much work has been done on soap substitutes by Blank, Schwartz, Klauder, Osborne and his associates. A complete review of the whole subject of cutaneous detergents has been published

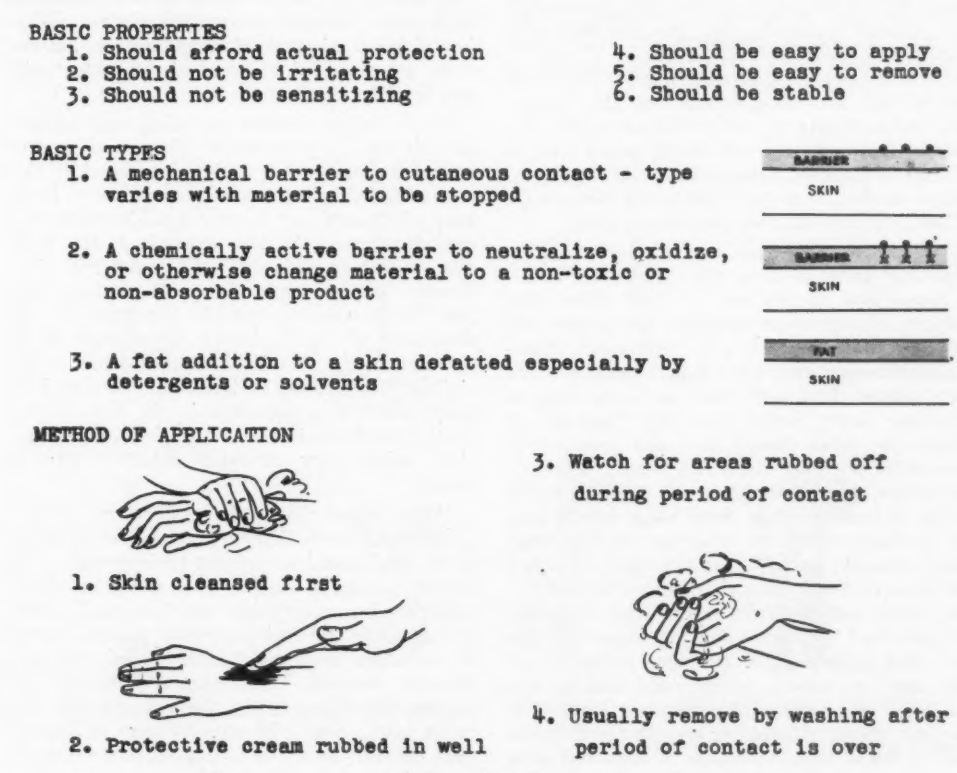
BASIC PROPERTIES
1. Should afford actual protection
2. Should not be irritating
3. Should not be sensitizing
4. Should be easy to apply
5. Should be easy to remove
6. Should be stable
BASIC TYPES
1. A mechanical barrier to cutaneous contact - type varies with material to be stopped
BARRIER
SKIN
2. A chemically active barrier to neutralize, oxidize, or otherwise change material to a non-toxic or non-absorbable product
BARRIER
SKIN
3. A fat addition to a skin defatted especially by detergents or solvents
FAT
SKIN
METHOD OF APPLICATION
1. Skin cleansed first
2. Protective cream rubbed in well
3. Watch for areas rubbed off during period of contact
4. Usually remove by washing after period of contact is over

Fig. 2
Diagramatic resume of some of the more important mechanisms of protective creams.

recently by Lane and Blank.[28] Their classification of the various types of detergents includes:

(1) Brush, abrasives, powder and other mechanical agents
(2) Air
(3) Water
(4) Oils
(5) Oil solvents
(6) Soaps
(7) New detergents

The medical profession itself should be concerned because of isolation technics and scrubbing procedures in the surgical pavillion and frequent washings during hours of practice and home calls. Mild soaps or soap substitutes should be supplied and used. The hands must be rinsed well after each soap washing and then creamed each time. In industry similar precautions must be taken and even more so because there is much more staining and soiling of the skin. It is in the realm of the "new detergents," the sulfated materials, that the practical solution to the problem will be found. Some of the recent soap substitutes that have been suggested and are being studied at the present time are acidolate oil, sulfonated castor oil mixture of Schwartz, the sulfonated neat's foot oil mixture of Klauder, Gross and Brown,[29] sulfated lauryl alcohols ("dreft") the lauryl sulfoacetate ("lowila") and sulfated propylene glycol.

Patients at times are not satisfied with the cleansing power of these soap substitutes and it is hoped that further research will make them cheaper to buy, more agreeable to use and will help overcome the feeling of insufficient cleansing which some people seem to have after their use, because these individuals are accustomed to associate heavy lather with the "feeling" of cleanliness. Even though these new soap substitutes have not been used very long, critical observations reveal that these are much less irritating to the skin than those soaps now in use. As a substitute for the abuse of strong chemicals, especially solvents, as detergent materials for the very dirty or the very stained skin, Klauder, Gross and Brown[29] recommend corn meal mixtures and to remove dyes or stains from the skin they suggest 10-30 per cent sodium bisulfite, and to remove paints, oils and greases 0.5-1 per cent sodium metasilicate. Because of the war, recent changes as regards the composition of soaps, such as increase in rosin and other non-fat materials, will make for increased irritation of the skin.

For those who have dry skin, creams should be rubbed into the skin immediately after each washing. In this respect, at least the creams are superior to the hand lotions. These creams should be readily available at washing stands or shall be carried around in small containers in the pocket so that they can be used at the time they are required. The mere creaming of the hands at night is not sufficient to relieve the dryness.

Protection of the skin may be secured also by the use of intermediary instruments to avoid contact with the fingers. In the practice of medicine, such instruments include gloves, tongue blades and clamps. When these materials are readily available then there will be slight excuse to probe with fingers near infected wounds, to use cotton or gauze sponges wet with irritant antiseptic solutions oozing all over the bare fingers. In the home, these intermediate instruments should be used chiefly in the dish washing routine. They include such helpful things as dish mops, scrapers, tongs and gloves. When house cleaning is to be done gloves, brushes and mops are preferred to avoid direct contact with wet or dirty rags.

Color change detector materials may be used to indicate the presence or absence of contact agents remaining on (or even in) the skin. One example of this in the munitions industry, is the soap of Mason and Botvinick to indicate mercury fulminate. Another example is the Webster reagent to indicate TNT and tetryl. The detector papers, kit, and crayon of the Chemical Warfare Service are also examples for the detection of fairly heavy concentrations of vesicants of the skin. This field of detection, for civilian life, is as yet undeveloped and does have great practical applications in the field of preventive medicine in relation to dermatitis, especially when very sensitive detectors can be found.

When lesions finally do result no matter how insignificant or benign they appear, early therapy is emphasized to prevent their spread. The lesions are not inoculable when not infected secondarily, but absorptive reactions and distant lesions occur and their continued presence serves to maintain increased sensitivity of the skin. Prompt removal from contact material and proper, usually bland, therapy should give rapid relief. Similarly, any dry areas on exposed skin should be protected, and protection reapplied as often as possible.

Also to minimize contact to the skin, machines, apparatuses and materials should be as

clean as possible and ventilation as adequate as possible so that air content and dust content if irritant and sensitizing materials would be reduced appreciably. The industrial plant, no matter what its size, should follow a definite program of preventive medicine, and this program will reduce the number of skin irritations quite extensively. The basis pattern for industrial medicine program has been outlined by Welt and applies to dermatitis also:

(1) Preplacement examination
(2) Periodical physical examination
(3) Industrial nursing care
(4) Plant physician
(5) Preventive medical program

Collective protection in the field of chemical warfare is, of course, most elaborate and refers to the use of gas proof shelters, some with filtered air. Training in chemical warfare will also furnish other measures as regards collective protection. For chemical warfare, the ability to retaliate in much greater measure is really the best prophylaxis.

The principles of collective protection can be adapted also for the home and for the professional environment of the physician and surgeon Instruments should be clean and the handles of the instruments should be dry and in the kitchen, handles of various types of instruments, especially around the sink, should be dried as often as possible. The protective devices should be carefully arranged in a suitable manner so that they are readily available. It must be emphasized again that individuals with sensitive skins of any type must heed all these cumbersome details. Otherwise they will develop a dermatitis and if relief from contact agents cannot be secured, this dermatitis will be most difficult to control.

SUMMARY

The great importance of prevention of irritation and sensitization of the skin from chemical compounds is recognized in every industrial group, military establishment, in all types of professions and also in the home. The following

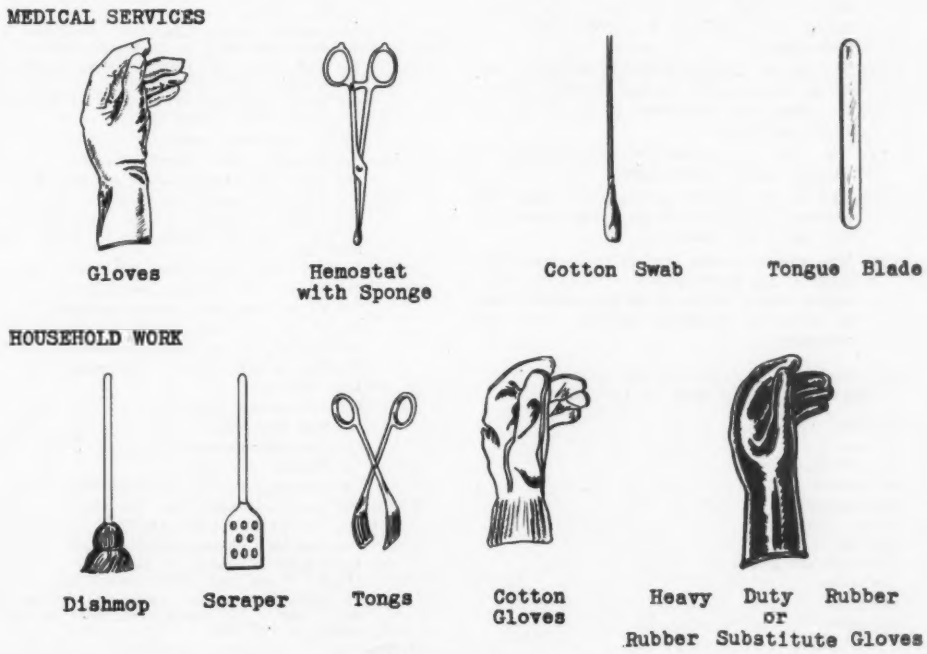

Fig. 3
Some intermediate instruments to prevent direct contact with hands.

outline of a practical prevention program can be advised:

(A) The endogenous phase, less well understood
  (1) Adequate diet intake and utilization
  (2) The attempted correction of anatomical or physiological inadequacies of the cutaneous barrier by:
    (a) The use of vitamin A and carotene for ichthyotic or dry skin types.
    (b) The use of B complex and the elimination or correction of proved systemic reactive factors for the seborrheic types.
    (c) The use of mild sedatives and antispasmodics, psychotherapy and conferences for the use of those with severe vasomotor disturbances or proved psychosomatic factors.
    (d) The use of immunotherapy only for plant dermatitis where the specific oleoresins may be used, or oral (?).
  (3) The therapy of any concomitant visceral disease

(B) The exogenous phase
  (1) The protection of the skin from contact with chemical compounds by various complete or partial protection clothing devices.
  (2) The intelligent use of local protective mixtures and this means the use of the correct mixture indicated and its correct application and removal.
  (3) The use of suitable detergent materials followed regularly by the use of bland creams to reduce any irritations produced by the cleansing process.
  (4) The use of intermediate instruments to prevent contact with fingers.
  (5) The use of detector materials to indicate the presence or absence of the contact agent on (or in?) the skin.
  (6) The environmental control to assure cleanliness of the surroundings in which the individual works and to keep the concentration of irritant or sensitizing materials down to a minimum.

SOME SPECIFIC EXAMPLES OF THE EXOGENOUS PHASE OF PROTECTION OF THE SKIN

(1) Complete protection
  (a) suits
  (b) coverall
  (c) jumpers
  (d) underwear
(2) Partial protection
  (a) caps
  (b) visors and goggles
  (c) aprons
  (d) boots
  (e) gloves
    (1) cotton
    (2) rubber
    (3) synthetic rubber
    (4) cloth covered with synthetic resins
    (5) leather
    (6) asbestos

(3) Protective mixtures
  (a) For dry skin, the following preparations are to be applied after washing and at bed time. They may serve also as good bases for inclusion of other substances if desired.
    (1) Group esters of chosterol-oxycholesterol in aliphatic hydrocarbon base
    (2) "Emulsified petroleum"
    (2) Petroleum and fatty acid esters. Fatty acid esters, spermaceti and distilled water
    (3) Oleic acid, white petroleum, oleic acid ester, amide of diethanolamine
    (4) Cetyl alcohol, 15 per cent
    white wax, 1 per cent
    sodium lauryl sulfate, 2 per cent
    propylene glycol, 10 per cent
    water, 72 per cent
    (5) Petroleum bases with higher fatty alcohols and their esters
    (6) White wax, 10
    oxycholesterin base, 10
    cetyl alcohol, 10
    peanut oil, 70 (French[31])
    (7) Cetyl alcohol, stearyl alcohol, sodium lauryl sulphate, wax, propylene glycol, water
  (b) For protection against oils
  Rx lanolin, 70 parts
  castor oil, 30 parts
  wetting agent, 2 parts (Schwartz)
  (c) For protection against synthetic resins (no menthol, no phenol)
    (1) Lassar's paste
    Emulsified petroleum
    Cholesterol esters in aliphatic base
    (2) or other inert powders in any of bases listed above.
  (d) For protection against organic solvents
    (1) Water soluble group
    (a) Protective cream (isopropanol, gums, Irish moss, starch, spermaceti, borax, benzoic acid)
    (b) Basic emulsion, vegetable gum, stearic acid, synthetic resin, water soluble
    (c) Stearic acid, cetyl alcohol, butyl carbitol, sodium silicate liquor, Dara base
    (2) Water insoluble group
  (e) For protection against match irritation
    (1) 1 per cent copper sulphate solutions (Anderson)
  (f) For protection against vesicants
    (1) protective creams of the Chemical Warfare Service—M1 before contact, M4 to remove vesicant from skin
  (g) For protection against plant irritations (value?)
    (1) 10 per cent potassium permanganate
    (2) 10 per cent ferric chloride ointment
    (3) 10 per cent ferric chloride solution
    (4) Urea peroxide ointments (Altemeier)
    (5) Zinc peroxide ointments (Altemeier)
(4) Detergent materials
  (a) Ordinary cleansing routines
    (1) Mild toilet soaps
    (2) New soap substitutes
    (a) Sulfated oil mixtures
    (b) Sulfated propylene glycol mixtures
  (b) For removal of stains from the skin
    (1) 10-30 per cent sodium bisulfite
    (2) Corn meal mixtures in sulfated oils
  (c) For removal of paints, oil and grease
    (1) 0.5—1 per cent sodium metasilicate
  (d) In addition the regular routine and frequent daily use of any of the creams listed above for the protection of dry skin.
(5) The use of intermediate instruments to avoid contact with the hands with special reference to:
  (a) Medicine: gloves, clamps, forceps, hemostats, tongue blades
  (b) Home: gloves, dish mops, scrapers, tongs, long handled brushes

(6) The use of detector materials to indicate contact agent on skin

(a) Soaps for mercury fulminate and other compounds in the munitions industry. Webster reagent for TNT and tetryl.

(b) Detector crayons, papers, and kits of Chemical Warfare Service for detection of relatively heavy concentrations of mustard, lewisite, nitrogen mustards.

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M. Y. DABNEY, M.D., Editor
C. P. LORANZ, Secretary, Treasurer and General Manager

Volume 37 MAY 1944 Number 5

EDITORIAL DEPARTMENT

SOUTHERN MEDICAL MEETING
St. Louis 1944

Because of the times, it was considered inadvisable in Cincinnati last year to choose a place or date for another meeting of the Southern Medical Association. Twelve months seemed too long a time ahead for definite plans, and the decision as to whether a meeting should be held was left for the spring of this year. Each physician now can be more definite about his own whereabouts for the remainder of 1944.

The Executive Committee of the Association, as requested by the Council last fall, met in April and unanimously chose St. Louis for the 1944 meeting, which will convene for three and one-half days, from Monday afternoon November 13 through Thursday, November 16, 1944. This judgment will be welcomed by members of the medical profession throughout the Southern states. General Chairman for the coming meeting is Dr. E. Vernon Mastin, of St. Louis, who will soon be ready to announce further plans.

This year it will again be possible to house all the activities of the convention under one roof, the spacious Municipal Auditorium of St. Louis.

A detailed account of the good work of the Executive Committee meeting follows on page 306.

TROPICAL MEDICINE AND POST WAR HEALTH PROGRAM

Despite every effort to practice effective preventive medicine in Africa, India, China, and the South Pacific, it is inevitable that some of the American troops will contract one or more tropical diseases and will return to the United States infected. Already the homeward trek of the sick has begun. Severe varieties of malaria and other diseases have likewise already been detected among prisoners of war. It is well to consider some of the possibilities which confront the country and to ponder on the relationship of these possibilities to the health of North America.

Many of the periodic diseases are characterized by a long incubation period, by pronounced chronicity, and in many instances by difficulties in diagnosis. All this tends to emphasize the necessity of training for tropical medicine on the part of Army public health workers and practicing physicians.

Since the beginning of history, wars have inevitably been attended by pestilence and disease. Throughout the records of man, famine and disease are companions of war. In World War I the United States fortunately escaped the importation of tropical diseases as its Army did not fight in the areas where these diseases were prevalent.

The Army and Navy medical authorities[1] have felt that the subject of tropical medicine has not been taught with sufficient thoroughness in the medical schools of this country. Consequently, they have given supplementary training to their personnel in the treatment and control of these diseases. The John and Mary R. Markle Foundation, the Army Medical School, and Tulane University are interested in teaching tropical medicine in the medical schools of the United States and Canada. The plan consists in offering to each medical school an opportunity for two members of its staff to attend a course in tropical medicine. The medical schools have expanded their teaching of tropical medicine. The Navy provides medical officers with special training in tropical medicine.

The southern part of the United States has much more concern with this problem than the northern part or Canada, because of the difference in climate and vectors.

1. MacIntire, R. T.: Am. J. Trop. Med., 23, 141, 1943.

LIVER INJURY FOLLOWING VACCINATIONS

Massing of the tremendous numbers of men who have been mobilized since Pearl Harbor would have been wholesale murder without the numerous prophylactic injections which have been administered against infectious diseases. Although many of these measures are comparatively new, their use is now taken for granted, and the mechanics of their activity as little thought of or generally understood by the average person as the inner workings of a radio.

During the last World War, the first extensive trials of typhoid vaccination were made. At that time, epidemics of typhoid and also of small pox were common among civilians in the United States. One of the most popular English authors, Bernard Shaw, was inveighing against the use of any kind of vaccine. The last three years have undoubtedly seen the greatest number of preventive inoculations of human beings in the history of medicine. Industrial output of vaccines has had to progress as fast as that of armaments, and drug manufacturers deserve tremendous credit for their large scale production of many difficult and perishable pure chemicals and biologicals.

The newest arrival in the prophylactic field has been the yellow fever vaccine, administered to troops in anticipation of service in tropical countries. It was not known at all in the last World War, and at least one false announcement of a vaccine for yellow fever was widely heralded in scientific circles in this country in the period between the two wars. The vaccine now recognized and in use is an attenuated strain of living yellow fever virus. A recent report from South America on a group of more than 600,000 persons vaccinated with this product in the last several years, indicates that it is an effective prophylactic, and that immunity lasts at least four years.[1]

There are reports of certain undesirable sequelae which have followed wholesale vaccination among the armed forces. In 1942 in various camps in the United States, an epidemic of acute hepatitis followed the use of yellow fever vaccine. Turner[2] and associates have described a series of cases which were observed after the use of a particular lot of vaccine. Between May and September, more than four thousand patients entered the station hospital at Camp Polk, Louisiana, with hepatitis.[2] The disease was definitely not yellow fever, though all patients had been vaccinated with the attenuated yellow fever virus. The incubation period was from nine to twenty-three weeks, and there were fourteen deaths. The symptoms were slow in disappearing. Anorexia, weakness, nausea, abdominal pain and vomiting, and jaundice were noted. The liver was enlarged and tender. Among the fatal cases, severe psychosis preceded death by about eight days. Rest was important in treatment. Muscular work increases the load on the liver, according to the authors, and persistence at labor or physical exertion by men with mild hepatitis, had serious and sometimes fatal effects.

Caravati[3] of Richmond, reports from the Percy Jones Hospital at Battle Creek a syndrome observed in a large number of men after apparent recovery from vaccine hepatitis. Psychoneuroses following this type of liver injury, he says, are not infrequent in men who have previously been in excellent health. Fatigue, emotional instability, and indigestion with fat intolerance were noted to a point which made service difficult or impossible. There were chronic cases, as opposed to the previously described acute exacerbations of the disease. It has been suggested that this entire syndrome is not a manifestation of a vaccinal disease, but a condition which has affected armies over the past two or three hundred years.

It is of interest that so-called neurotic or psychiatric symptoms characterized both the acute and chronic states reported and that liver injury was apparent. Subjective symptoms are always difficult to allocate etiologically. The rapid change of status of many hundred thousand persons could not fail in itself to produce many purely psychic disturbances, and the etiology of symptoms which appear months after a supposed injury or illness can rarely be indisputable.

In these cases, mental symptoms for which usually the brain primarily is credited, seemed to have their origin in the liver. Although this gland could not be shown to be abnormal by the usual clinical tests, after cessation of icterus and subsidence of the swelling, the in-

1. Editorial. Efficacy of Vacinnation Against Yellow Fever. J.A.M.A. 124:988 (April 1) 1944.

2. Turner, Roy H.; Snavely, J. R.; Grossman, E. B.; Buchanan, R. N.; and Foster, Stuart O.: Some Clinical Studies of Acute Hepatitis Occurring in Soldiers after Inoculation with Yellow Fever Vaccine, with Especial Consideration of Severe Attacks. Ann. Int. Med. 20:193 (Feb.) 1944.

3. Caravati Charles M.: Posthepatitis Syndrome. Sou. Med. Jour., this issue, page 251.

jury which the liver had sustained still interfered with normal psychologic function. The origin, characteristics and course of this syndrome are interesting and important.

One does not think of insanity as depending upon the digestion. However, from the above, one might look for liver injury as one of the possible etiologic factors in psychoses. Insanity has too long been regarded as a purely cerebral aberration. Sanity is dependent upon normal function of all the glands of the body, among which the liver is perhaps the most vital.

TWENTY-FIVE YEARS AGO

From Journals of 1919

Bactericides[1].—Chlorazene, Dakin's universal antiseptic, helped to win the war. Every doctor in America should know that Chlorazene . . . is fifty times more powerful in its germicidal action then carbolic acid and at least a thousand times more powerful than Dobell's solution . . . Chlorazene . . . safe, stable, nonirritating . . . is successfully used as a gargle, as a douche, for wounds, in surgery, in gum infections, ocular inflammations and genito-urinary practice. . . .

Pernicious Anemia and Gastric Anacidity[2].—Achylia is really to be regarded as an incident in the development of pernicious anemia and is not connected with the etiology of this disease. A . . . patient had been under my care for some years with dyspeptic symptoms. Her acidity was normal and at times even a hyperacidity was shown. Some three years after I had first observed her she developed a true pernicious anemia. During this illness it was demonstrated that she had a total achylia. After six months of illness, splenectomy was done. At the present time—five years after the operation—she is in perfect health and has completely regained her HCl and gastric ferments . . . Achylia patients rarely develop carcinoma or pernicious anemia.

Function of the Thyroid[3].—The thyroid controls the sexual functions of the body. The sexual appetite is lowered or lost in those with diseased or degenerate thyroids. A stringy throat, a wrinkled neck is oftimes positive evidence of sexual apathy. . . .

Does the thyroid play any part in lunacy? I shall cite one instance. In a certain asylum in this country 100 cases out of 600 inmates have goitre. . . .

After studying the thyroid . . . I came to the conclusion that pellagra was a disease caused by the deficiency of the thyroid gland . . . 28 cases have been treated on the theory that the cause of pellagra is a hypothyroidia, and with but a single exception all were cured.

1. Abbott Laboratories. Adv. Sou. Med. Jour., 12:21, 1944.
2. Soper, Horace: The Diagnosis and Treatment of Achylia Gastrica. Sou. Med. Jour., 12:235, 1919.
3. Stewart, Jno. P.: A Study of the Functions of the Thyriod Gland. Sou. Med. Jour., 12:238, 1919.

Venereal Disease in World War I[4].—The morals of the soldiers of the American Army are better than those of any army in the history of warfare. An annual venereal rate of 29 per thousand in the A. E. F. and 20 per thousand in the training camps in the United States, is unprecedented among soldiers, and so much better than that of the men who were drafted into the United States Army that the Regular Army surgeons speak of the "depravity of civil life." G.H.Q. Bulletin No. 54 . . . places the United States Army squarely on record as recognizing the dangers of "regulated and inspected houses of prostitution." . . . the remark is credited to Sir William Osler: "Man worships at the shrine of Bacchus early in the evening; a few hours later he is enamored of Venus; and then he becomes a devotee of Mercury for two years."

Paris has been the source of infection for many men. On one occasion, nine officers spent one night in Paris. Seven of them contracted syphilis . . . G. H. Q. Bulletin No. 54 . . . will go down in history as one of the greatest military documents ever written.

4. Editorial. War Medicine, Jan. 1919. Reprinted Sou. Med. Jour., 12:243, 1919.

Correspondence

DERMATOLOGIC PROBLEMS IN GENERAL PRACTICE

Editor, Southern Medical Journal:

The next to the last sentence in paragraph 2 of my article entitled, "Dermatologic Problems in General Practice"—the sentence appeared on page 176 of the Southern Medical Journal for March, 1944—should have read as follows: "A few of the mild wet dressings which are usually well tolerated are the following: 0.5 per cent solution of aluminum subacetate; saturated or a weaker solution of boric acid; 0.1 per cent or 1:1000 solution of silver nitrate, or physiologic salt solution." When I wrote "2 per cent" on the proof I was thinking of the "weaker solution of boric acid," which lay on the other side of the mark of punctuation. Thank you for your help.

Sincerely,

Paul A. O'Leary, M.D.

Rochester, Minnesota, March 31, 1944

Book Reviews

Essentials of Dermatology. By Norman Tobias, M.D., Senior Instructor in Dermatology, St. Louis University. Second Edition. 497 pages, illustrated. Philadelphia: J. B. Lippincott Company, 1944. Cloth $4.75.

This little book is remarkably complete for its size and as up to date as a book can well be. Designed for students and general practitioners, it contains more than the student can or, at least will, retain and all that the practitioner is at all likely ever to make use of. The emphasis is on diagnosis and treatment with

a minimum of pathology, and useless speculation as to etiology left out. No effort is made to include all the medicants and methods that have ever been suggested. Not least important, probably, is the page and a half of "General Therapeutic Suggestions" at the end which should be read often by both student and practitioner, and which might well have been put at the front.

The illustrations, photographs of the author's patients, are good and numerous, considering the size of the book.

Orthopaedic Nursing. By Robert V. Funsten, M.D., Professor of Orthopaedic Surgery, University of Virginia Medical School, and Carmelita Calderwood R.N., Consultant in Orthopaedic Nursing, National League of Nursing Education, New York, N. Y. St. Louis: The C. V. Mosby Company, 1943, 602 pages.

This is undoubtedly the finest text book of orthopedic nursing available, containing the most recent advances in civilian and military orthopedics together with the special nursing technics required. The book is adaptable to a long or short course in orthopedic nursing. Its terms are easily understandable by student nurses and well illustrated with diagrams and photographs.

Particular attention is paid to the seemingly smal' details of nursing care which are very important to the patient's comfort and insure successful results, as wheel chair restraints, protection of spica casts from soiling; turning patients to prevent breaking the casts, bed posture care of arthritic patients, and so on. Several chapters are devoted to care of fracture patients, traction apparatus and braces. The typical fractures and injuries are illustrated without transforming the book into a specialists' text.

Among the newer subjects treated are the disc syndromes, external pin fixation of fractures, deodorization of osteo dressings, nursing in disasters, and application of Kenny packs. A number of the photographs are poorly reproduced. There are an excellent glossary and questions for study following each study unit.

Pharmacology. Michael G. Mulinos, M.D., A.B., A.M., Ph.D., Associate Professor of Pharmacology College of Physicians and Surgeons, Columbia University, New York, N. Y. 482 pages. New York: Oxford University Press, 1944. Cloth $4.00.

The enormous new knowledge in anatomy, physiology, pathology, and chemistry with its therapeutic application is complete for each section. It is an orderly scientific exposition of the current theories of how drugs act and how they may be used. It fills a long felt need for a short manual of pharmacology giving the modern concepts and established facts of pharmacology.

Outstanding is the chemotherapy which brings together in simple and usable form the enormous literature of recent years. The section on peripheral nerves and the one on the central nervous system are given from the standpoint of recent advantages in anatomy, physiology, and applied therapeutics. In the last section on hormones and vitamins, the enormous literature dividing the known from the unknown, is well discussed. It is refreshing to find in some thirty-two pages all the fundamental facts separating the grain from the chaff, and brought up to date.

Unfortunately this book may not reach the doctors who need it most. At the close of each section there is suggested reading. It is a good text for students and practitioners.

Clinical Laboratory Methods and Diagnosis. A Textbook on Laboratory Procedures with Their Interpretation. By R. B. H. Gradwohl, M.D., D. Sc., Director of the Gradwohl Laboratories and Gradwohl School of Laboratory Technique. Third Edition. Volumes I and II. 2130 pages, illustrated. St. Louis: The C. V. Mosby Company, 1943. $20.00.

The third edition of this standard text has been completely revised and comprises the most complete single reference work in the field of clinical pathology and pathologic anatomy. There are numerous photographs, tables and illustrations. There are innumerable references to work published since 1938 and data on Rh factor, staining, bacteriologic, chemical methods and so on.

Atlas of Obstetric Technic. By Paul Titus, M. D., Obstetrician and Gynecologist to the St. Margaret Memorial Hospital, Pittsburgh. 180 pages, illustrated by E. M. Shackelford, Medical Illustrator, John C. Oliver, Memorial Research Foundation, St. Margaret Memorial Hospital, Pittsburgh. St. Louis: The C. V. Mosby Company, 1943. Cloth $7.00.

The object of this book is to present in pictorial form the subject of modern obstetric technic. In addition to the management of normal and operative deliveries there are included a section on operations during pregnancy, on ectopic pregnancy and on sterility. The format of the book is that of a standard geographical atlas. The large page is well suited to the numerous illustrations used. These pen-and-ink sketches are so simple and clear that they are understood at a glance. The only written text consists of the titles of the drawings. The book is not to be used as an obstetric text but to supplement it.

The material presented is most practical. When a clove hitch is used the method of making the loop is illustrated. The chapter on cesarean section includes a description of the transperitoneal and the extraperitoneal (Water's) operations. With contraception as reliable as it now is it would not seem necessary to illustrate, as the author does, an operation for temporary sterilization. A patient who was a poor risk for pregnancy would in all probability be a poor risk for the two necessary laparotomies.

There is little in this book that cannot be found in the author's text. The pictorial presentation, however, more than justifies the atlas. It should be useful to students who are learning technic and to the practitioner who wishes to refresh his memory on details of procedure not often used by him.

Continued on page 308

EXECUTIVE COMMITTEE MEETING

The Executive Committee of the Council of the Southern Medical Association met at the Coronado Hotel, St. Louis, Missouri, Tuesday, April 4, at 10:30 a. m. Present: Dr. Oscar B. Hunter, Chairman, Washington, D. C.; Dr. Curtice Rosser, Dallas, Texas; Dr. Neil S. Moore, St. Louis, Missouri; Dr. W. T. Wootton, President, Hot Springs National Park, Arkansas; and Dr. Edgar G. Ballenger, President-Elect, Atlanta, Georgia. Sitting with the Committee by invitation of the Chairman: Dr. M. Pinson Neal, Past-President and Member of Board of Trustees, Columbia, Missouri; Dr. Lucien A. LeDoux, Immediate Past-Chairman of Council and of Executive Committee, New Orleans, Louisiana; Dr. E. L. Henderson, Past-Chairman of Executive Committee, Louisville, Kentucky; and Mr. C. P. Loranz, Secretary and General Manager, Birmingham, Alabama.

The Council of the Southern Medical Association at its annual meeting last November went on record as favoring the usual annual meeting this year unless conditions which could not at that time be anticipated seemed to indicate that a meeting should not be held. It was the expressed judgment of the Council that the Southern Medical Association meetings are essential, as essential in wartime as in peace, if not more so. The Council charged its Executive Committee with the responsibility of a final decision on whether or not the Association should meet and where.

The Executive Committee was unanimous in its decision for the Association to meet as usual this November and was also unanimous in its acceptance of the invitation of the St. Louis Medical Society for the annual meeting to be held in St. Louis. So the annual meeting of the Southern Medical Association will be held in St. Louis, Missouri, Monday, Tuesday, Wednesday and Thursday, November 13-16.

The Executive Committee decided that since these are wartimes there should be a partial streamlining of program activities, that there should be more program activities than last

EXECUTIVE COMMITTEE MEETING. Seated, left to right—Dr. M. Pinson Neal, Dr. W. T. Wootton and Dr. Edgar G. Ballenger. Standing, left to right—Dr. Lucien A. LeDoux, Dr. E. L. Henderson, Dr. Oscar B. Hunter, Dr. Curtice Rosser, Dr. Neil S. Moore and Mr. C. P. Loranz.

November but not so much as at pre-war meetings. The meeting will formally open at noon on Monday, the scientific activities beginning at 2:00 p. m. and continuing through Thursday afternoon. Monday afternoon and Tuesday forenoon will be St. Louis Day, clinical session programs by the local profession. The Sections of the Association will begin Tuesday afternoon and continue through Thursday. The Executive Committee decided that it would not be proper in these wartimes to have any official entertainment, so for the St. Louis meeting there will be no president's reception and ball, no alumni reunion dinners, no fraternity luncheons, no golf or trap-shooting tournaments.

All official activities—registration, scientific meetings, exhibits (scientific, technical and hobby) and the sessions of organizations meeting conjointly with the Southern Medical Association—will *all* be at the Municipal Auditorium, everything under one roof.

The Association, complimenting its officers in St. Louis for the Executive Committee meeting, entertained the officers of the St. Louis Medical Society, officers of the St. Louis County Medical Society, and other officers, at a dinner that evening at the Coronado Hotel. At the regular meeting of the St. Louis Medical Society that evening, three members of the Executive Committee, Dr. Oscar B. Hunter, Dr. Edgar G. Ballenger and Dr. Curtice Rosser, gave scientific papers. Following the scientific program the Southern Medical Association was host to the St. Louis Medical Society and the visitors for a social hour, with refreshments, in the Medical Society Building.

OFFICERS

The following is a complete roster of the officers of the Southern Medical Association for 1943-1944, and of associations meeting conjointly with the Southern Medical Association:

President—Dr. W. T. Wootton, Hot Springs National Park, Ark.

President-Elect—Dr. Edgar G. Ballenger, Atlanta, Ga.

Vice-President—Dr. James A. Ryan, Covington, Ky.

Secretary-Manager (Secretary, Treasurer and General Manager)—Mr. C. P. Loranz, Birmingham, Ala.

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Associate Editor of Journal—Mrs. Eugenia B. Dabney, Birmingham, Ala.

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Board of Trustees (All are Past-Presidents)—Dr. J. W. Jervey, Chairman, Greenville, S. C.; Dr. Walter E. Vest, Huntington, W. Va.; Dr. Irvin Abell, Louisville, Ky.; Dr. Paul H. Ringer, Asheville, N. C.; Dr. M. Pinson Neal, Columbia, Mo.; Dr. Harvey F. Garrison, Jackson, Miss.

Section on General Practice—Dr. W. L. Pressly, Chairman, Due West, S. C.; Dr. Charles E. Smith, Vice-Chairman, Terra Alta, W. Va.; Dr. B. A. Hopkins, Secretary, Stuart, Va.

Section on Medicine—Dr. T. Dewey Davis, Chairman, Richmond, Va.; Dr. Grace A. Goldsmith, Vice-Chairman, New Orleans, La.; Dr. William H. Kelley, Secretary, Charleston, S. C.

Section on Gastroenterology—Dr. William Earl Clark, Chairman, Washington, D. C.; Dr. Milford O. Rouse, Vice-Chairman, Dallas, Tex.; Dr. Julian M. Ruffin, Secretary, Durham, N. C.

Section on Neurology and Psychiatry—Dr. Theodore A. Watters, Chairman, New Orleans, La.; Dr. Cobb Pilcher, Vice-Chairman, Nashville, Tenn.; Dr. Jas. Asa Shield, Secretary, Richmond, Va.

Section on Pediatrics—Dr. William Weston, Jr., Chairman, Columbia, S. C.; Dr. Wm. L. Funkhouser, Vice-Chairman, Atlanta, Ga.; Dr. Angus McBryde, Secretary, Durham, N. C.

Section on Pathology—Dr. R. H. Rigdon, Chairman, Little Rock, Ark.; Dr. Frank L. Apperly, Vice-Chairman, Richmond, Va.; Dr. Robert A. Moore, Secretary, St. Louis, Mo.

Section on Radiology—Dr. Lawther J. Whitehead, Chairman, Richmond, Va.; Dr. Robt. J. Reeves, Vice-Chairman, Durham, N. C.; Dr. Karl F. Kesmodel, Secretary, Birmingham, Ala.

Section on Dermatology and Syphilology—Dr. Clinton W. Lane, Chairman, St. Louis, Mo.; Dr. Carey C. Barrett, Vice-Chairman, Lexington, Ky.; Dr. Francis A. Ellis, Secretary, Baltimore, Md.

Section on Allergy—Dr. W. Randolph Graham, Chairman, Richmond, Va.; Dr. Clarence K. Weil, Vice-Chairman, Montgomery, Ala.; Dr. Edna S. Pennington, Secretary, Nashville, Tenn.

Section on Physical Therapy—Dr. Emil J. C. Hildenbrand, Chairman, Washington, D. C.; Dr. Nathan H. Polmer, Vice-Chairman, New Orleans, La.; Dr. Robert L. Bennett, Secretary, Warm Springs, Ga.

Section on Surgery—Dr. E. L. Henderson, Chairman, Louisville, Ky.; Dr. I. A. Bigger, Vice-Chairman, Richmond, Va.; Dr. William F. Rienhoff, Jr., Secretary, Baltimore, Md.

Section on Orthopedic and Traumatic Surgery—Dr. John D. Sherrill, Chairman, Birmingham, Ala.; Dr. Winthrop M. Phelps, Vice-Chairman, Baltimore, Md.; Dr. Lenox D. Baker, Secretary, Durham, N. C.

Section on Gynecology—Dr. John T. Sanders, Chairman, New Orleans, La.; Dr. M. Y. Dabney, Vice-Chairman, Birmingham, Ala.; Dr. Olin S. Cofer, Secretary, Atlanta, Ga.

Section on Obstetrics—Dr. George R. Osborn, Chairman, Tulsa, Okla.; Dr. H. Hudnall Ware, Jr., Vice-Chairman, Richmond, Va.; Dr. Waverly R. Payne, Secretary, Newport News, Va.

Section on Urology—Dr. Austin I. Dodson, Chairman, Richmond, Va.; Dr. Wm. R. Miner, Vice-Chairman, Covington, Ky.; Dr. Jarratt P. Robertson, Secretary, Birmingham, Ala.

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American Public Health Association, Southern Branch (meeting conjointly with Southern Medical Association)—Dr. C. F. McClintic, President, Williamsburg, W. Va.; Dr. E. C. Harper, First Vice-President, Richmond, Va.; Mr. H. J. Darcey, Second Vice-President, Oklahoma City, Okla.; Miss Donna Pearce, Third Vice-President, San Juan, Puerto Rico; Dr. R. H. Hutcheson, Secretary-Treasurer, Nashville, Tenn.

National Malaria Society (meeting conjointly with Southern Medical Association)—Mr. George H. Bradley, President, Atlanta, Ga.; Mr. H. A. Johnson, President-Elect, Memphis, Tenn.; Mr. Stanley B. Freeborn, Vice-President, Atlanta, Ga.; Dr. Mark F. Boyd, Secretary-Treasurer, Tallahassee, Fla.; Dr. Charles F. Craig, Editor, San Antonio, Tex.

American Society of Tropical Medicine (meeting conjointly with Southern Medical Association)—Dr. Wilbur A. Sawyer, President, New York, N. Y.; Dr. Rolla E. Dyer, President-Elect, Washington, D. C.; Dr. H. W. Brown, Vice-President, Chapel Hill, N. C.; Dr. Joseph S. D'Antoni, Secretary-Treasurer, New Orleans, La.; Dr. Charles F. Craig, Editor, San Antonio, Tex. *American Academy of Tropical Medicine* (meeting conjointly with American Society of Tropical Medicine)—Dr. Edward B. Vedder, President, Oakland, Calif.; Dr. Mark F. Boyd, Vice-President, Tallahassee, Fla.; Dr. Ernest Carroll Faust, Secretary, New Orleans, La.; Dr. Thomas T. Mackie, Treasurer, Washington, D. C.

American College of Chest Physicians, Southern Chapter (meeting conjointly with Southern Medical Association)—Dr. Paul H. Ringer, President, Asheville, N. C.; Dr. Alvis E. Greer, First Vice-President, Houston, Tex.; Dr. Carl C. Aven, Second Vice-President, Atlanta, Ga.; Dr. Benjamin L. Brock, Secretary-Treasurer, Louisville, Ky.

American Academy of Pediatrics, Region 2 (meeting conjointly with Southern Medical Association)—Dr. Hugh Leslie Moore, Region Chairman, Dallas, Tex.; Dr. Warren W. Quillian, Vice-Chairman, Coral Gables, Fla.

Women Physicians of the Southern Medical Association—Dr. Grace A. Goldsmith, Chairman, New Orleans, La.; Dr. Margaret A. Limper, Vice-Chairman, Louisville, Ky.

Woman's Auxiliary to the Southern Medical Association—Mrs. John Pierpont Helmick, President, Fairmont, W. Va.; Mrs. W. W. Potter, President-Elect, Knoxville, Tenn.; Mrs. Joseph E. Wier, First Vice-President, Louisville, Ky.; Mrs. Eugene G. Peek, Second Vice-President, Ocala, Fla.; Mrs. R. C. Haynes, Recording Secretary, Marshall, Mo.; Mrs. H. V. Thomas, Corresponding Secretary, Clarksburg, W. Va.; Mrs. S. J. Wolferman, Treasurer, Fort Smith, Ark.; Mrs. Olin S. Cofer, Historian, Atlanta, Ga.; Mrs. H. Leslie Moore, Parliamentarian, Dallas, Texas.

Book Reviews

Continued from page 305

An Introduction to Medical Mycology. By George M Lewis, M.D., and Mary E. Hopper, M.S., Research Fellow in Medicine, Cornell University Medical School. 342 pages, illustrated. Chicago: The Year Book Publishers, Inc., 1943. Cloth $6.50.

The second edition of Lewis and Hopper's book is evidence that medical mycology is coming into its own. It replaces voluminous compilations (usually uncritical) in both mycology and dermatology. There are about 50 references to new developments since 1938 and all chapters have been revised. New data on laboratory technic, skin tests and on histoplasmosis are included.

Notes for the R. M. O. of an Infantry Unit. By C. P. Blacker, M.C., M.A., M.D., F.R.C.P., Late R.M.O. 2nd Batt. Coldstream Guards. 77 pages. New York and London: Oxford University Press, 1943.

This is one of the Oxford War Manuals designed for use with British troops. It is an excellent guide to various details of organization and administration that devolve upon the regimental medical officer.

The scope of the manual is quite broad and the author discusses the organization of the R. A. P. staff and the selection and instruction of stretcher bearers. Malingering, inoculations and vaccinations, skin inspections and venereal diseases, the use of morphine at the front at the time of injury, the careful inspection of the water cart, daily, weekly, and monthly reports, the operations of the field ambulance and the disposal of the sick, all come in for careful consideration.

In recognition of the dependence which must be placed by the medical officer on his corps men and noncommissioned officers, the manual is appropriately dedicated to two sergeants "in gratitude for their unfailing help and loyalty."

Southern Medical News

SOUTHERN MEDICAL ASSOCIATION NIGHT IN ST. LOUIS

At the regular meeting of the St. Louis Medical Society, St. Louis, Missouri, on Tuesday evening, April 4, the three speakers were officers of the Southern Medical Association—Dr. Oscar B. Hunter, Chairman of Executive Comittee of Council, Washington, D. C., "Atypical Leukemia and Leukemoid Reactions"; Dr. Edgar G. Ballenger, President-Elect, Atlanta, Georgia, "The Relationship of Obstructions to Genito-Urinary Affections"; and Dr. Curtice Rosser, Member of Executive Committee of Council, Dallas, Texas, "Benign Lesions of the Right Colon." After the scientific portion of the program members of the St. Louis Medical Society and visitors were the guests of the Southern Medical Association for a social hour, a so-called smoker, with refreshments in the Medical Society Building.

Other out-of-town officers of the Association present were: Dr. W. T. Wootton, President, Hot Springs National Park, Arkansas; Dr. M. Pinson Neal, Past-President and Member of Board of Trustees, Columbia, Missouri; Dr. Lucien A. LeDoux, Immediate Past-Chairman of Council and of Executive Committee, New Orleans, Louisiana; Dr. E. L. Henderson, Past-Chairman of Committee, Louisville, Kentucky; and Mr. C. P. Loranz, Secretary and General Manager, Birmingham, Alabama.

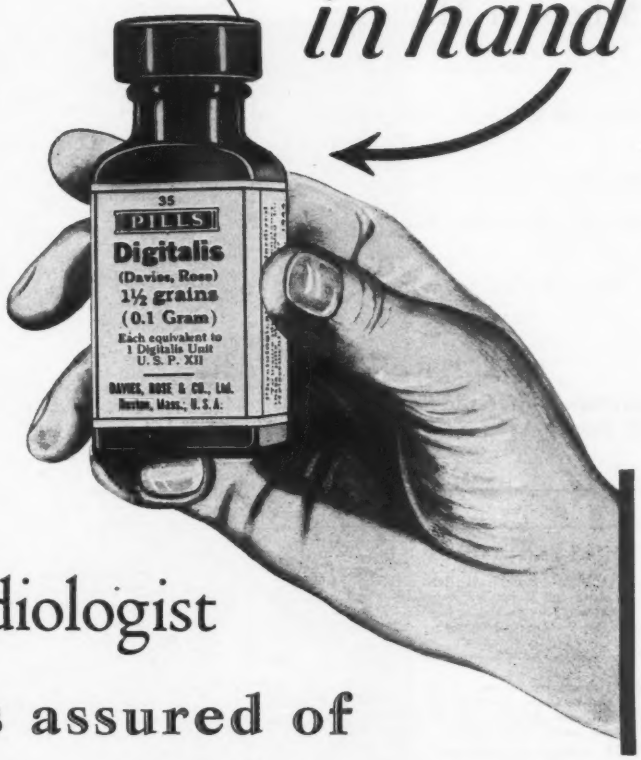
The meeting was presided over by the President of the St. Louis Medical Society, Dr. Edwin C. Ernst. He announced that the Executive Committee of the Council of the Southern Medical Association, which had been in session in St. Louis that day, had unanimously accepted the invitation of the St. Louis Medical Society to hold the annual meeting in St. Louis in November. He also announced the appointment of Dr. E. Vernon Mastin to be General Chairman for the Southern Medical Association Meeting.

ALABAMA

Dr. Roy Rachford Kracke, Professor of Pathology, Emory University School of Medicine, Atlanta, Georgia, has been named Dean of the new four year Medical School of the University of

Continued on page 56

With this in hand



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Continued from page 308

Alabama as announced recently by the President of the University. Dr. Stuart Graves, Dean of the School of Basic Medical Sciences at Tuscaloosa, will remain as Dean during the transition period while Dr. Kracke is organizing his Birmingham office and Emory University is obtaining a successor. Dr. Graves will continue at the University as an adviser on student health, acceptance of medical students and development of the new medical college. Dr. Kracke is a native Alabamian, born at Hartselle. His academic education was in Alabama, his A.B. from the University of Alabama.

The Northington General Hospital professional staff, Tuscaloosa, was host on the night of March 20 to the Tuscaloosa County and Jefferson County Medical Societies to pass on to civilian physicians data concerning methods and progress of the Army's Medical Department in the treatment of war casualties.

Dr. Sam Gaines Stubbins, Jr., Birmingham, and Miss Billie Jane Malm, Cleveland, Ohio, were married recently.

Dr. Paul Stahl Mertins, Jr., Montgomery, and Miss Anne Moss, Birmingham, were married recently.

Dr. John William Rose and Miss Pauline Mims, both of Birmingham, were married recently.

Deaths

Dr. Leon Chappelle Agee, Whistler, aged 22, died recently of enlarged thymus.

Dr. Roy Nolan Hare, Jasper, aged 49, died recently of heart disease.

ARKANSAS

Dr. Oliver C. Melson, Little Rock, has been appointed a member of the Council of the Southern Medical Association from Arkansas for a regular Council term of five years, beginning in mid-November, the appointment having been announced recently by the President-Elect, Dr. Edgar G. Ballenger, Atlanta, Georgia. Dr. Melson succeeds Dr. S. J. Wolferman, Fort Smith, whose term will expire at the close of the St. Louis meeting in November and who, having served the constitutional limit, is not eligible for reappointment.

Columbia County Medical Society has elected Dr. W. H. Horn, Magnolia, President; Dr. T. S. Jordan, Magnolia, Vice-President; and Dr. T. H. Jones, Waldo, Secretary-Treasurer.

Grant County Medical Society has elected Dr. O. R. Kelly, Sheridan, President; and Dr. John W. Cole, Prattsville, Secretary-Treasurer.

Greene County Medical Society has elected Dr. J. A. Dillman, President; Dr. Earle H. McKelvey, Vice-President; and Dr. W. McD. Lamb, Secretary-Treasurer, all of Paragould.

Independence County Medical Society has elected Dr. W. P. Gray, Batesville, President; Dr. V. D. McAdams, Cord, Vice-President; and Dr. F. Q. Wyatt, Batesville, Secretary-Treasurer.

Jackson County Medical Society has elected Dr. E. L. Watson, Newport, President; Dr. C. R. Gray, Newport, Vice-President; and Dr. J. B. Ivy, Tuckerman, Secretary-Treasurer.

Lawrence County Medical Society has elected Dr. J. L. Merrell, Walnut Ridge, President; Dr. R. S. Faircloth, Walnut Ridge, Vice-President; and Dr. Chas. D. Tibbels, Black Rock, Secretary-Treasurer.

Little River County Medical Society has elected Dr. E. W. Yates, Foreman, President; and Dr. C. A. Harding, Ashdown, Secretary-Treasurer.

Lonoke County Medical Society has elected Dr. S. S. Beaty, England, President; Dr. W. B. Crowgey, Scott, Vice-President; and Dr. O. D. Ward, England, Secretary-Treasurer.

Miller County Medical Society has elected Dr. H. E. Murry, President; Dr. W. Decker Smith, Vice-President; and Dr. H. K. Abrans, Secretary-Treasurer, all of Texarkana.

Pope-Yell County Medical Society has elected Dr. A. B. Tate, Sr., President; Dr. Ellis Gardner, Vice-President; and Dr. W. O. Young, Secretary-Treasurer, all of Russellville.

Nevada County Medical Society has elected Dr. T. W. McDaniel, Boughton, President; Dr. W. B. H. Pool, Bodcaw, Vice-President; and Dr. J. W. Kennedy, Prescott, Secretary-Treasurer.

Randolph County Medical Society has elected Dr. J. E. Smith, Reyno, President; Dr. W. E. Hamil, Pocahontas, Vice-President; and Dr. M. A. Baltz, Pocahontas, Secretary-Treasurer.

Continued on page 58

Radiography of the Cranial Cavity

WHEN an intracranial lesion or anomaly is suspected, radiography can generally offer decisive diagnostic evidence. On occasion it also provides a reliable periodic check on the progress of disease, and a means for postoperative observation. As with serious disorders in other regions, so in cases of abnormalities within the skull, the services of a competent radiologist represent a modern scientific aid that cannot safely be overlooked or ignored.

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Continued from page 56

Washington County Medical Society has elected Dr. J. P. Delaney, President; Dr. W. A. Fowler, Vice-President; and Dr. Ruth Ellis Lesh, Fayetteville, Secretary-Treasurer.

White County Medical Society has elected Dr. S. J. Allbright, Searcy, President; Dr. Porter R. Rodgers, Searcy, Vice-President; and Dr. D. W. Sloan, Beebe, Secretary-Treasurer.

Clark County Medical Society has elected Dr. C. K. Townsend, President; and Dr. Joe W. Reid, Secretary-Treasurer, both of Arkadelphia.

Carroll County Medical Society has elected Dr. A. L. Carter, Berryville, President; Dr. J. F. John, Eureka Springs, Vice-President; and Dr. D. K. McCurry, Green Forest, Secretary-Treasurer.

Desha County Medical Society has elected Dr. H. A. Rands, President; and Dr. Gibbs Biscoe, Secretary-Treasurer, both of Dumas.

Lafayette County Medical Society has elected Dr. F. E. Baker, Stamps, President; and Dr. A. W. Keith, Stamps, Vice-President and Secretary-Treasurer.

Mississippi County Medical Society has elected Dr. T. F. Hudson, Luxora, President; Dr. E. C. Budd, Blytheville, Vice-President; and Dr. P. W. Turrentine, Osceola, Secretary-Treasurer.

Monroe County Medical Society has elected Dr. M. L. Dalton, Brinkley, President; Dr. W. H. Martin, Holly Grove, Vice-President; and Dr. W. L. Boswell, Clarendon, Secretary-Treasurer.

Phillips County Medical Society has elected Dr. W. C. King, President; Dr. J. W. Nicholls, Vice-President; and Dr. M. Fink, Secretary-Treasurer, all of Helena.

Woodruff County Medical Society has elected Dr. J. W. Morris, McCrory, President; Dr. F. C. Maguire, Augusta, Vice-President; and Dr. C. E. Dungan, Augusta, Secretary-Treasurer.

Montgomery County Medical Society has elected Dr. J. H. McLean, Caddo Gap, President; and Dr. G. E. Watkins, Mount Ida, Secretary-Treasurer.

Dr. H. A. Rands, Dumas, recently took a course in obstetrics at Cook County Graduate School of Medicine, Chicago.

Dr. William J. Curry, Rogers, recently observed his 93d birthday, keeping office hours as usual and attending to patients.

Dr. Roy T. Goodwin, formerly of Little Rock, is Medical Director, Brown Shipbuilding Corporation, Houston, Texas.

Dr. L. S. Dunaway, Conway, has been discharged from the Army Medical Corps and has returned to Conway to practice.

Dr. R. M. Blakely, Little Rock, has been elected a School Director.

Dr. and Mrs. E. F. Brewer, Augusta, celebrated their golden wedding anniversary March 22.

Dr. J. Harry Hayes, Little Rock, has been elected a Fellow in the International College of Surgeons.

Dr. L. R. Boen, Oakgrove, has moved to Bauxite.

Dr. Doris A. Baldridge, Conway, has moved to Vero Beach, Florida.

Deaths

Dr. James Henderson Fowler, Harrison, aged 69, died March 10.

Dr. Columbus Edgar Gannaway, Warren, aged 77, died March 5.

Dr. Arthur C. Haney, Russellville, aged 54, died recently.

DISTRICT OF COLUMBIA

Dr. Arnold McNitt, Washington, has been appointed a member of the Council of the Southern Medical Association from the District of Columbia for a regular Council term of five years, beginning in mid-November, the appointment having been announced recently by the President-Elect, Dr. Edgar G. Ballenger, Atlanta, Georgia. Dr. McNitt succeeds Dr. Oscar B. Hunter, Washington, whose term will expire at the close of the St. Louis meeting in November and who, having served the constitutional limit, is not eligible for reappointment.

District of Columbia Society for Crippled Children, Washington, recently opened a new consultation clinic for children suffering from cerebral palsy, under the direct supervision of Dr. Winthrop Morgan Phelps, Medical Director, Children's Rehabilitation Institute in Baltimore, and Counselor on cerebral palsy for the National Society for Crippled Children.

Continued on page 60

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Continued from page 58

Dr. Harvey Franklin Kreuzburg, Lieutenant, Medical Corps, U. S. Navy, Washington, serving in the Pacific theater, has been awarded the Silver Star for gallantry during an air attack on his destroyer and has also been awarded the Purple Heart.

Major General Norman T. Kirk, Surgeon General, U. S. Army, Washington, recently had Honorary Membership in the Medical Society of the District of Columbia conferred upon him.

Dr. Edgar A. Bocock, recently head of Gallinger Municipal Hospital, Washington, has been named administrator of Doctors Hospital and Superintendent of the Medical Center, which includes the hospital and the adjoining Washington and Columbia Medical Building. He took over his duties March 4.

DEATHS

Dr. Frank Wheeler Braden, Washington, aged 73, died recently.

Dr. Daniel Thomas Birtwell, Washington, aged 70, died recently.

Dr. John Edward Lind, Washington, aged 55, died recently.

Dr. Mary Almera Parsons, Washington, aged 93, died recently of coronary occlusion and arteriosclerosis.

FLORIDA

Leon-Gadsden-Liberty-Wakulla-Jefferson County Medical Society has elected Dr. J. L. Williams, Tallahassee, President; Dr. A. S. Turk, Chattahoochee, Vice-President; and Dr. L. L. Dozier, Tallahassee, Secretary-Treasurer.

Manatee County Medical Society has elected Dr. S. G. Hollingsworth, Bradenton, President; Dr. Blake Lancaster, Manatee, Vice-President; and Dr. Lowrie W. Blake, Bradenton, Secretary-Treasurer.

Nassau County Medical Society has elected Dr. W. A. Brewster, Callahan, President; Dr. L. L. Bunker, Fernandina, Vice-President; and Dr. George A. Dame, Fernandina, Secretary-Treasurer.

Alachua County Medical Society has elected Dr. Walter E. Murphress, President; Dr. Wilburn Lassiter, Vice-President; and Dr. John H. Thomas, Secretary-Treasurer, all of Gainesville.

Brevard County Medical Society has elected Dr. I. F. Bean, Melbourne, President; Dr. A. F. Thomas, Cocoa, Vice-President; and Dr. I. K. Hicks, Melbourne, Secretary-Treasurer.

Broward County Medical Society has elected Dr. John A. Johnston, President; and Dr. O. C. Brown, Secretary-Treasurer, re-elected, both of Ft. Lauderdale.

Jackson County Medical Society has elected Dr. Courtland D. Whitaker, Marianna, President; Dr. R. L. Miller, Graceville, Vice-President; and Dr. C. A. Adams, Jr., Marianna, Secretary-Treasurer.

St. Lucie-Okeechobee-Indian River-Martin County Medical Society has elected Dr. M. D. Council, President; Dr. L. L. Widdon, Vice-President; and Dr. A. M. Sample, Secretary-Treasurer, all of Fort Pierce.

Dr. W. M. Goodson, Miami, announced that Dr. William Redman has become associated with him.

Dr. Joseph H. Lucinian and Mrs. B. Edna Roberts, both of Miami, were married recently.

DEATHS

Dr. Lyman L. Bunker, Fernandina, aged 68, died March 8.

Dr. William Herron Campron, Daytona Beach, aged 69, died recently.

Dr. Clara S. Eirley, St. Petersburg, aged 76, died recently of myocardial degeneration.

Dr. William Joseph Holton, Plant City, aged 60, died recently.

Dr. Millen A. Nickle, Clearwater, aged 63, died March 6.

Dr. John William Schelpert, St. Petersburg, aged 85, died recently of coronary occlusion.

Dr. William R. Warren, Key West, aged 68, died recently.

GEORGIA

Dr. W. A. Selman, Atlanta, has been appointed a member of the Council of the Southern Medical Association from Georgia for a regular Council term of five years, beginning in mid-November, the appointment having been announced recently by the President-Elect, Dr. Edgar G. Ballenger, Atlanta, Georgia. Dr. Selman succeeds Dr. Marion C. Pruitt, Atlanta, whose term will expire at the close of the St. Louis meeting in November and who, having served the constitutional limit, is not eligible for reappointment.

Continued on page 62

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Continued from page 60

Dr. Roy Rachford Kracke, Professor of Pathology, Emory University School of Medicine, Atlanta, has been appointed Dean of the University of Alabama Medical College. Dr. Stuart Graves, Dean of the School of Basic Medical Sciences at Tuscaloosa, Alabama, will remain as Dean during the transition period while Dr. Kracke is organizing his Birmingham office and Emory University is obtaining a successor.

Tattnall County Medical Society has elected Dr. J. C. Collins, Collins, President; Dr. G. W. Tootle, Glennville, Vice-President; and Dr. J. M. Hughes, Glennville, Secretary-Treasurer.

Tift County Medical Society has elected Dr. F. B. Pickett, Ty Ty, President; Dr. D. B. Harrell, Tifton, Vice-President; and Dr. M. L. Webb, Tifton, Secretary-Treasurer.

Troup County Medical Society has elected Dr. W. P. Phillips, President; Dr. Thos. N. Freeman, Vice-President; and Dr. C. Mark Whitehead, Secretary-Treasurer, all of LaGrange.

Hancock County Medical Society has elected Dr. Horace Darden, President; and Dr. H. L. Earl, Secretary-Treasurer, both of Sparta.

Hall County Medical Society has elected Dr. Jesse L. Meeks, President; Dr. W. B. Harrison, Vice-President; and Dr. H. H. Lancaster, Secretary-Treasurer, all of Gainesville.

Jenkins County Medical Society has elected Dr. Henry G. Lee, President; Dr. Cleveland Thompson, Vice-President; and Dr. Q. A. Mulkey, Secretary-Treasurer, all of Millen.

Jackson-Barrow Counties Medical Society has elected Dr. E. R. Harris, Winder, President; Dr. J. H. Campbell, Commerce, Vice-President; and Dr. A. A. Rogers, Commerce, Secretary-Treasurer.

Muscogee County Medical Society has elected Dr. D. R. Venable, President; Dr. J. L. Spikes, Vice-President; and Dr. Leon Lapides, Secretary-Treasurer, all of Columbus.

Spalding County Medical Society has elected Dr. W. C. Miles, President; Dr. T. I. Hawkins, Vice-President; and Dr. T. O. Vinson, Secretary-Treasurer, all of Griffin.

Blue Ridge Medical Society has elected Dr. E. W. Watkins, Ellijay, President; Dr. W. C. Chastain, Ellijay, Vice-President; and Dr. C. B. Crawford, Blue Ridge, Secretary-Treasurer.

Brooks County Medical Society has elected Dr. A. B. Jones, Jr., President; Dr. L. A. Smith, Vice-President; and Dr. Harry A. Wasden, Secretary-Treasurer, all of Quitman.

Baldwin County Medical Society has elected Dr. W. A. Bostick, President; Dr. E. Y. Walker, Vice-President; and Dr. Z. S. Sikes, Secretary-Treasurer, all of Milledgeville.

Cobb County Medical Society has elected Dr. M. N. McCall, Acworth, President; Dr. G. O. Allen, Marietta, Vice-President; and Dr. W. C. Mitchell, Smyrna, Secretary-Treasurer.

Carroll County Medical Society has elected Dr. J. W. Watts, Bowdon, President; Dr. J. E. Powell, Villa Rica, Vice-President; and Dr. H. L. Barker, Carrollton, Secretary-Treasurer.

Douglas County Medical Society has elected Dr. T. B. Taylor, President; Dr. J. G. Bussey, Vice-President; and Dr. C. V. Vansant, Secretary-Treasurer, all of Douglasville.

Emanuel County Medical Society has elected Dr. J. H. Chandler, President; Dr. S. S. Youmans, Vice-President; and Dr. D. D. Smith, Secretary-Treasurer, all of Swainsboro.

Greene County Medical Society has elected Dr. Goodwin Gheesling, Greensboro, President; Dr. W. Hill Lewis, Siloam, Vice-President; and Dr. F. H. Killam, Greensboro, Secretary-Treasurer.

Glynn County Medical Society has elected Dr. T. V. Willis, President; and Dr. M. E. Winchester, Vice-President, both of Brunswick.

Cherokee-Pickens Counties Medical Society has elected Dr. J. T. Pettit, President; and Dr. P. D. McCornett, Secretary-Treasurer, both of Canton.

Crisp County Medical Society has elected Dr. H. J. Williams, President; Dr. L. E. Williams, Vice-President; and Dr. A. J. Whelchel, Secretary-Treasurer, all of Cordele.

Grady County Medical Society has elected Dr. A. B. Reynolds, President; and Dr. L. V. Rogers, Secretary-Treasurer, both of Cairo.

Hart County Medical Society has elected Dr. A. O. Meredith, Hartwell, President; and Dr. G. T. Harper, Dewy Rose, Secretary-Treasurer.

Hancock County Medical Society has elected Dr. Horace Darden, President; and Dr. H. L. Earl, Secretary-Treasurer, both of Sparta.

Laurens County Medical Society has elected Dr. E. B. Claxton, President; Dr. Charles L. Hicks, Vice-President; and Dr. O. H. Cheek, Secretary-Treasurer, all of Dublin.

Continued on page 64

IN PANCREATIC DYSFUNCTION

Holadin REG. U.S. PAT. OFF. is a brand of Extract of Whole Pancreas. It contains all of the enzymes normally present in the gland; and the associated organic and inorganic constituents. As replacement therapy in conditions associated with insufficient pancreatic secretion, and as an aid in the digestion of carbohydrates and fats, HOLADIN is recognized as an efficient product.

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BARD-PARKER COMPANY, INC.

Danbury, Connecticut

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Continued from page 62

Mitchell County Medical Society has elected Dr. J. G. Crovatt, Camilla, President; Dr. M. M. Burns, Pelham, Vice-President; and Dr. D. P. Belcher, Pelham, Secretary-Treasurer.

Monroe County Medical Society has elected Dr. W. J. Smith, Juliette, President; and Dr. G. H. Alexander, Forsyth, Secretary-Treasurer.

Montgomery County Medical Society has elected Dr. W. M. Moses, Uvalda, President; Dr. J. E. Hunt, Anniston, Alabama, Vice-President; and Dr. J. W. Palmer, Ailey, Secretary-Treasurer.

Polk County Medical Society has elected Dr. O. R. Styles, President; Dr. S. M. White, Vice-President; and Dr. Grace R. Ross, Secretary-Treasurer, all of Cedartown.

Ware County Medical Society has elected Dr. J. E. Penland, President; Dr. W. P. Stoner, Vice-President; and Dr. Kenneth McCullough, Secretary-Treasurer, all of Waycross.

Dr. Elizabeth Martin announces the opening of her office at 756 Cypress Street, N.E., Atlanta, practice limited to gynecology and obstetrics.

Dr. A. J. Davis, former Emanuel County Commissioner of Health, Swainsboro, has resigned to accept the office of the Richmond County Commissioner of Health.

Dr. J. Palmer Mayo has moved to Eastman and will engage in practice in Eastman and Dodge Counties.

Dr. John D. Wiley, Milledgeville, has joined the staff of the Scott Hospital in that city.

Dr. F. C. Wilson, Valdosta, has been appointed Chairman of the First Aid Service of the Lowndes County Chapter of the American Red Cross.

Dr. Sterling H. Jernigan announces the opening of offices at 3110 Roswell Road, N.W., Atlanta.

Dr. Robert Edwin Shiflet, Augusta, and Miss Helen Marie Crisp were married recently.

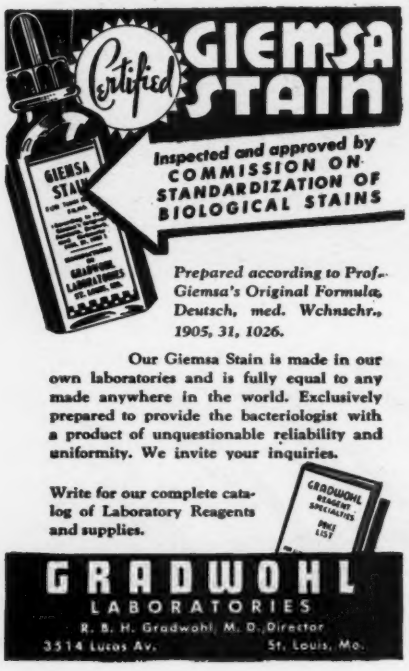
Deaths

Dr. Charles Carroll Fishburn, Darien, aged 59, died recently.

Dr. Guy Fleming Spearman, Atlanta, aged 63, died March 8 of pneumonia.

Dr. George Leon Smith, Swainsboro, aged 83, died recently.

Dr. Richard S. Watkins, Columbus, aged 85, died recently.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Write for our complete catalog of Laboratory Reagents and supplies.
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3514 Lucas Av. St. Louis, Mo.

Kentucky

Adair County Medical Society has elected Dr. W. J. Flowers, President; and Dr. W. Todd Jeffries, Secretary, both of Columbia.

Allen County Medical Society has elected Dr. John W. Meredith, Scottsville, President; Dr. A. G. Cosby, Fountain Run, Vice-President; and Dr. A. O. Miller, Scottsville, Secretary-Treasurer.

Henry County Medical Society has elected Dr. J. C. Hartman, Campbellsburg, President; Dr. F. D. Hancock, Sulphur, Vice-President; and Dr. Owen Carroll, New Castle, Secretary.

Letcher County Medical Society has elected Dr. T. M. Perry, Jenkins, President; Dr. J. E. Crawford, Whitesburg, Vice-President; and Dr. Owen Pigman, Whitesburg, Secretary-Treasurer.

Lewis County Medical Society has elected Dr. H. M. Bertram, Vanceburg, President; Dr. C. C. Merritt, Tollesboro, Vice-President; and Dr. E. Esham, Vanceburg, Secretary.

Owsley County Medical Society has elected Dr. W. E. Becknell, Booneville, President; Dr. M. B. Gabbard, Vice-President; and Dr. W. H. Gibson, Booneville, Secretary-Treasurer.

Pike County Medical Society has elected Dr. W. D. Damron, President; Dr. M. D. Flanary, Pikeville, Vice-President; and Dr. S. B. Casebolt, Pikeville, Secretary-Treasurer.

Shelby County Medical Society has elected Dr. H. B. Blaydes, LaGrange, President; Dr. G. F. McMunn, Eminence, Vice-President; and Dr. C. C. Risk, Secretary-Treasurer.

Taylor County Medical Society has elected Dr. F. I. Buckner, President; Dr. C. V. Hiestand, Vice-President; and Dr. L. S. Hall, Secretary-Treasurer, all of Campbellsville.

Trigg County Medical Society has elected Dr. G. E. Hatcher, Cerulean, President; Dr. John White, Cerulean, Vice-President; Dr. Elias Futrell, Cadiz, Secretary; and Dr. N. C. Magraw, Cadiz, Treasurer.

Warren-Edmonson County Medical Society has elected Dr. Finis London, Woodburn, President; Dr. Eldon W. Stone, Bowling Green, Vice-President; and Dr. Paul Q. Peterson, Hardinsburg, Secretary-Treasurer.

Washington County Medical Society has elected Dr. J. C. Mudd, Springfield, President; Dr. M. A. Coyle, Springfield, Vice-President; and Dr. J. H. Hooper, Willisburg, Secretary-Treasurer.

Caldwell County Medical Society has elected Dr. J. M. Moore, President; Dr. F. T. Linton, Vice-President; and Dr. W. L. Cash, Secretary-Treasurer, all of Princeton.

Carlisle County Medical Society has elected Dr. T. A. Pease, Cunningham, President; Dr. G. W. Payne, Bardwell, Vice-President; and Dr. E. E. Smith, Bardwell, Secretary-Treasurer.

Fayette County Medical Society has elected Dr. Amplias Owen Sisk, President; Dr. Carey C. Barrett, Vice-President; and Dr. Charles D. Cadwood, Secretary, all of Lexington.

Four County Medico-Dental Medical Society has elected Dr. John G. White, Cerulean, President; Dr. E. N. Futrell, Cadiz, Vice-President; and Dr. W. L. Cash, Secretary, Princeton, re-elected.

Greenup County Medical Society has elected Dr. H. T. Morris, Greenup, President; Dr. H. H. Holbrook, Greenup, Vice-President; and Dr. Virgin Skaggs, Russell, Secretary-Treasurer.

Powell County Medical Society has elected Dr. M. L. Knox, Bowen, President; Dr. S. T. Scrivner, Stanton, Vice-President; and Dr. I. W. Johnson, Stanton, Secretary-Treasurer.

Dr. James A. Campbell, Health Director, Scott County, has been transferred to a similar position in Mason County.

Dr. George M. Jewell, Paris, Health Director, Bourbon County, has been assigned to Scott County for two days each week.

Dr. R. R. Slucher, Commander, U. S. Navy, Buechel, is now at the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Dr. Robert Monroe, Major, Medical Corps, U. S. Army, Louisville, is stationed at Maxwell Field, Alabama.

Jewish Hospital Staff, Louisville, has elected Dr. William Curry Martin, President; Dr. Morris M. Weiss, Vice-President; and Dr. Oscar Bloch, Jr., Secretary.

Deaths

Dr. Ellis Saunders Allen, Jr., Louisville, aged 35, died recently of tumor of the brain.

Dr. James Edwin Bow, Burkesville, aged 72, died recently following a stroke of paralysis.

Dr. Elbridge L. Busby, Henderson, aged 65, died recently.

Dr. George Hurlburt Felton, Berea, aged 97, died recently of chronic myocarditis.

Dr. John M. Kearney, Sr., Louisville, aged 68, died March 5.

Dr. Adolph O. Pfingst, Louisville, aged 74, died recently of coronary occlusion.

Dr. Marcus H. Sutherland, Harrodsburg, aged 92, died recently.

Continued on page 66

STRENGTH without weight

• "Specialist" plaster-of-Paris bandages and splints are frequently used together to build a strong, durable cast of minimal weight. By reinforcing areas with a plaster slab made with six or more Specialist splints, at right angles to a light, circular body cast, sound medical engineering principles are utilized. A final circular covering then completes the cast. Reduction of bulk and weight affords added patient comfort. Time, labor and material are conserved.

"Specialist" bandages and splints are hard-coated, non-dusting, quick-saturating—ideally suited to this technique.

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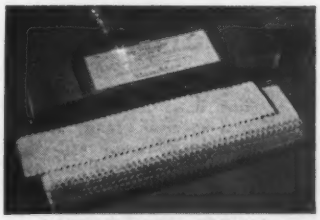

"SPECIALIST" SPLINTS

50 in a box—3 convenient sizes.

Continued from page 64

LOUISIANA

Morehouse Parish Medical Society has elected Dr. E. L. Maddry, President; Dr. W. A. Rodgers, Vice-President; and Dr. B. J. Amoroso, Secretary-Treasurer, all of Bastrop.

St. Martin Parish Medical Society has elected Dr. L. A. Morrogh, President; and Dr. L. Weinstein, Secretary-Treasurer, both of Breaux Bridge.

Southern Baptist Hospital, New Orleans, has elected Dr. Robert Sharp, Chairman of its clinical staff; Dr. Sam Hobson, Vice-Chairman; Dr. J. W. Reddoch, Secretary; and Dr. Jos. W. Wells, Treasurer. Dr. E. H. Lawson, Dr. J. E. Bailey, Dr. Thos. B. Sellers and Dr. Robert Bernhard were elected to fill vacancies on the Executive Committee.

Eye, Ear, Nose and Throat Hospital, New Orleans, has been made a residuary legatee of the estate of the late Mrs. Celeste Stauffer Eastwick, a former resident of New Orleans. The amount of the bequest is believed to be sufficient for the erection and operation of additional hospital facilities. Additional funds will revert to the institution on the death of Mrs. Eastwick's heirs.

Dr. John H. Musser, New Orleans, has been elected to a ten-year term as Trustee of the University of Pennsylvania.

Dr. Cecil A. Krakower, formerly connected with the Columbia University School of Tropical Medicine, San Juan, Puerto Rico, has been appointed Assistant Professor of Bacteriology and Pathology, Tulane University of Louisiana School of Medicine, New Orleans; and Dr. Arthur Judson Walker, formerly Acting Medical Director, Firestone Plantations Company in Liberia, has been named Assistant Professor of Tropical Medicine.

Deaths

Dr. Yves Ardoin, Ville Platte, aged 63, died recently.

Dr. Franklin Virginius Boyd, Opelousas, aged 64, died recently of cardiac dilatation.

Dr. A. M. Charlett, Belle Alliance, aged 74, died recently.

Dr. Thomas Stark, Thibodaux, aged 79, died recently.

Dr. Rufus Clyde Webb, Rayne, aged 55, died recently of coronary thrombosis.

Dr. Clarence J. Wichser, New Orleans, aged 53, died recently.

MARYLAND

Dr. James A. McCallum, Centerville, Health Officer, Queen Annes County, has been appointed Health Officer, Washington County, succeeding Dr. William R. Willard, Hagerstown.

Dr. Harry B. Smith, formerly of Jacksonville, Florida, and now field consultant, Division of Venereal Disease Control in the State Department of Health, has been appointed Senior Medical Supervisor, Bureau of Venereal Disease Control of the Baltimore City Department of Health.

Dr. Elvin L. Sederlin, formerly Acting Director of the Venereal Disease Control Division of the North Dakota State Health Department, Bismarck, has resigned to accept a position as Assistant Health Director of Baltimore County.

Dr. Francis Willoughby Traynor, Cumberland, and Miss May Agnes Skinner, Charleston, South Carolina, were married recently.

MISSISSIPPI

Mississippi State Board of Health has elected Dr. S. E. Eason, New Albany, President; and Dr. J. P. Culpepper, Hattiesburg, to the three-member Executive Committee which is composed of the president, secretary and executive officer, and one member.

Winona District Medical Society has elected Dr. Edgar Giles, Avalon, President; and Dr. Lamar Bailey, Secretary and Treasurer; and Dr. S. L. Bailey, Kosciusko, Atta County; Dr. C. H. Holman, Carrollton, Carroll County; Dr. D. H. Thomas, French Camp, Choctaw County; Dr. S. B. Caruthers, Grenada, Grenada County; Dr. W. H. Weeks, Doddsville, Holmes County; Dr. E. W. Holmes, Winona, Montgomery County; and Dr. W. H. Curry, Eupora, Webster County, Vice-Presidents.

Deaths

Dr. Edwin F. Arnold, Bellefontaine, aged 73, died recently of cerebral hemorrhage.

Dr. James B. Anderson, Yazoo City, aged 72, died recently.

Dr. W. J. Chapman, Doddsville, aged 64, died recently.

Dr. Claude Frank Gilbert, Corinth, aged 53, died recently of carcinoma of the right arm and axilla.

Dr. Harry Maxwell Smith, Natchez, aged 55, died recently.

Dr. Richard Dunckley Sessions, Natchez, aged 74, died recently.

Dr. Ira S. Taylor, Tunica, died recently.

Dr. James Algernon Toole, Stewart, aged 61, died recently.

Dr. J. T. Rainer, Yazoo City, aged 54, died recently.

Dr. Raleigh Jack Wilson, Bailey, aged 71, died recently.

MISSOURI

The Frederick C. Narr Fellowship Foundation has been incorporated to carry on the activities of the late Dr. Narr in providing financial assistance to young medical students and interns. In 1923 Dr. Narr became head of the Williams Volker Laboratory of Research Hospital, Kansas City, a position he held until his death last September.

Trinity Lutheran Hospital, Kansas City was left a trust fund by Dr. Caleb A. Ritter, who at the time of his death, January 31, was a resident in the Hospital. The fund will be used for the maternity department and will be known as the Dr. C. A. Ritter bequest.

Dr. and Mrs. J. D. Smith, Shelbina, celebrated their seventy-first wedding anniversary on February 20.

Dr. C. E. Salyer, formerly of Hannibal, has been appointed Assistant Physician at State Hospital No. 2, St. Joseph.

Dr. William V. McKnelly, Jefferson City, has been elected Vice-President of the St. Mary's Hospital staff, Jefferson City.

Dr. William W. Gist, Lieutenant, Medical Corps, U. S. Army, Kansas City, has been cited "for skillful and effective performance of duty under adverse circumstances while serving with a marine aircraft group in the Solomons."

Continued on page 68

LaMOTTE BLOOD CHEMISTRY SERVICE

NEW and IMPROVED
LaMOTTE FALLING DROP DENSIOMETER
(Two Models)

An important adjunct in treating cases of shock.
For determining blood proteins, albumin - globulin ratio and specific gravity of body fluids. These units are produced exclusively with the cooperation of H. G. Barbour and W. F. Hamilton, and approved by them.
This outfit is now available in two models—the larger model comes complete for $65 and the small model at $35. Prices F.O.B. Towson, Md.
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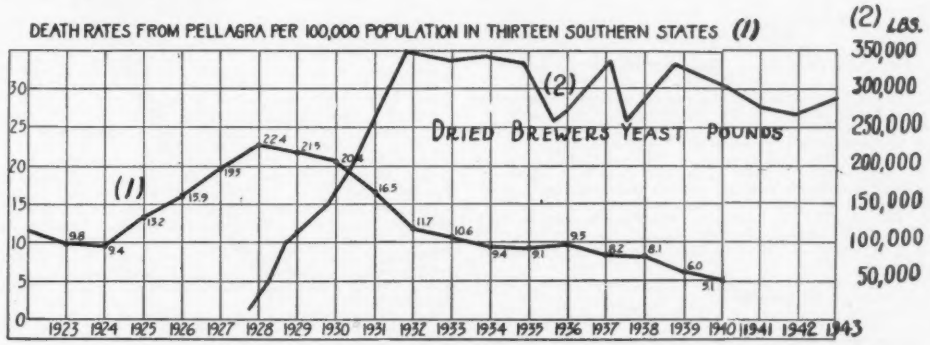
This service includes a series of similar outfits for conducting the following accurate tests: Blood Sugar, Blood Urea, Sulfathiazole, Sulfapyridine, Sulfanilamide, Sulfadiazine and Sulfaguanidine in Blood and Urine. Icterus Index, Phenolsulphonthalein, Urine pH, Blood pH, Gastric Acidity, Calcium - Phosphorus, Blood Bromides.

1919 25th ANNIVERSARY 1944

THE VITAMIN FOOD COMPANY'S DRIED BREWERS' YEAST RECORD IN PELLAGRA

The poundage, year by year, of the Vitamin Food Company's Dried Brewers' Yeast going into the pellagra sections is added to the pellagra mortality chart published in the Southern Medical Journal, November 1942. About 15% has gone through Health Departments and relief agencies; the rest through jobbers and retailers, into practically every community in the pellagra sections and with all use left entirely to neighborhood physicians.



The Clinical Record

Goldberger found yeast and more so brewers' yeast the richest source of the whole of the P-P (pellagra-preventive) factor. This has been widely and universally confirmed in America, Italy, Egypt, Arabia, India and parts of the Balkans; confirmed in use with nicotinic acid to supply the whole of the anti-pellagric factor.

Nicotinic Acid and Riboflavin

These important parts, short of all of the anti-pellagric factor, are aiding. Dried brewers' yeast so far has been found the richest known natural source. Dann and Handler, Journal Biol. Chem. 140, 201 (1941), report, microbiological assay, gammas of nicotinic acid (niacin) per gram, liver 174, kidney cortex 139, leg muscle 76, brewers yeast extract 640. The riboflavin in dried brewers yeast is about twenty times that in milk; about sixteen times that in lean beef, as the milk and lean beef content in riboflavin is given by Sherman, The Science of Nutrition, 1943.

A Balanced Diet

Pellagra begins, as Goldberger found, where dairy cows and chickens, gardens and beef steers become scarce. Dried brewers' yeast is, of course, high in balanced proteins, iron and is universally turned to as the potent and dependable source of the whole of vitamin B.

Green and Red Label

The undebittered, Green Label, is more widely used in pellagra; the debittered, Red Label, in general practice.

Samples sent to physicians and hospitals.

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VITAMIN RESEARCH LABORATORIES, INC.

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Continued from page 66

DEATHS

Dr. Guglielmo Cataldi, St. Louis, aged 72, died recently of cerebral hemorrhage.

Dr. Eliza Lee Johnson, Concordia, aged 60, died recently.

Dr. Herbert Lee Montague, St. Louis, aged 73, died recently of cerebral thrombosis and generalized arteriosclerosis.

Dr. Eugene Adelbert Pond, Kansas City, aged 64, died recently of pneumonia.

Dr. Fredk. Crosby Rumsey, Kansas City, aged 64, died recently.

Dr. Onal Arthur Sale, Neosho, aged 52, died recently of coronary occlusion.

Dr. Benj. Early Stockwell, St. Louis, aged 81, died recently.

NORTH CAROLINA

Dr. Tinsley R. Harrison, Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, has resigned and accepted a position as Dean of the Faculty and Executive Professor of Experimental Medicine and Professor of Internal Medicine, Southwestern Medical Foundation Medical School, Dallas, Texas. Dr. George T. Harrell, Jr., Assistant Professor of Medicine, has been appointed Director of the Department; Dr. J. C. Pass Fearrington has been promoted to Associate Professor of Clinical Medicine; and Dr. Frederick R. Taylor has been promoted to Professor of Medical Literature.

Dr. Chauncey L. Royster, Raleigh, has received the James R. Lisa award for "meritorious work in research medicine" which was bestowed by the Society of the Alumni of the City Hospital in New York for his paper entitled "Anatomic Findings in the Heart in Combined Hypertension and Syphilis."

The Guilford General and the Burrus Memorial Hospitals, High Point, were recently merged under the name of High Point Memorial Hospital, the Guilford General being designated as the Washington Street Unit, and the Burrus Memorial as the Boulevard Unit. Dr. J. P. Richardson is Director of the combined unit and Dr. W. R. Peters is Business Manager.

Dr. Edgar Angel and Miss Maybelle Bryant, both of Franklin, were married recently.

Dr. Otho B. Ross, Jr., and Miss Dorothy Maude Lowe, Miami, Florida, were married recently.

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Established 1897
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Practical postgraduate course in Ophthalmology and Otolaryngology.

Doctors admitted at any time for review and clinical observation.

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Regular price $1.25. Special price to doctors, 1 only, 65c postpaid.
See Foley Exhibit at Space No. 155 A. M. A. Convention, June 12-16

FOLEY MFG. CO. 85 Second St. N. E., Minneapolis 13, Minn.

DEATHS

Dr. George Adam Smith, Black Creek, aged 84, died recently of angina pectoris.

Dr. Timothy Graham Williams, Rosehill, aged 56, died recently.

OKLAHOMA

Dr. Felix T. Gastineau has been appointed Acting Director of the student health service at the University of Oklahoma, Norman, succeeding Dr. William A. Fowler.

DEATHS

Dr. Roy Wilson Dunlap, Tulsa, aged 65, died recently.

Dr. William Peter Grimaud, Medford, aged 60, died recently.

Dr. Pettis Madison Richardson, Cushing, aged 65, died recently of injuries received when the automobile in which he was driving was struck by a train.

SOUTH CAROLINA

Abbeville County Medical Society has elected Dr. M. J. Boggs, President; and Dr. F. L. Mabry, Secretary-Treasurer, both of Abbeville.

Allendale County Medical Society has elected Dr. W. R. Tuten, Fairfax, President; and Dr. A. B. Preacher, Allendale, Secretary-Treasurer.

Anderson County Medical Society has elected Dr. George Peel, President; Dr. A. C. Bradham, Vice-President; and Dr. Ned Camp, Secretary-Treasurer, all of Anderson.

Chester County Medical Society has elected Dr. J. N. Gaston, Jr., President; Dr. V. P. Patterson, Vice-President; and Dr. R. D. Hicks, Secretary-Treasurer, all of Chester.

Chesterfield County Medical Society has elected Dr. D. C. Griggs, Pageland, President; Dr. M. W. Hook, Cheraw, Vice-President; and Dr. J. P. Harrison, Cheraw, Secretary-Treasurer.

Colleton County Medical Society has elected Dr. L. M. Stokes, President; and Dr. J. W. Chapman, Secretary-Treasurer, both of Walterboro.

Darlington County Medical Society has elected Dr. A. P. Rosenfield, Darlington, President; Dr. M. L. Townsend, Society Hill, Vice-President; and Dr. W. A. Carrigan, Darlington, Secretary-Treasurer.

Dillon County Medical Society has elected Dr. B. F. Hardy, President; Dr. E. B. Michaux, Vice-President; and Dr. S. C. Henslee, Secretary-Treasurer, all of Dillon.

Dorchester County Medical Society has elected Dr. A. S. Behling, President; and Dr. A. R. Johnston, Secretary-Treasurer, both of St. George.

Fairfield County Medical Society has elected Dr. C. S. McCants, President; Dr. J. E. Douglas, Jr., Vice-President; and Dr. J. T. Hardy, Secretary-Treasurer, all of Winnsboro.

Kershaw County Medical Society has elected Dr. S. J. Blackmon, Kershaw, President; Dr. Carl A. West, Camden, Vice-President; and Dr. G. S. Rhame, Camden, Secretary-Treasurer.

Lancaster County Medical Society has elected Dr. G. T. Noel, President; and Dr. J. C. Harris, Secretary-Treasurer, both of Lancaster.

Lee County Medical Society has elected Dr. F. A. Blanchard, President; and Dr. L. A. Nimmons, Secretary-Treasurer, both of Bishopville.

Lexington County Medical Society has elected Dr. O. C. Holley, President; Dr. James Crosson, Vice-President; and Dr. J. H. Mathias, Secretary-Treasurer, all of Lexington.

Oconee County Medical Society has elected Dr. John T. Davis, Walhalla, President; Dr. W. C. Mayes, Fair Play, Vice-President; and Dr. Wm. A. Strickland, Westminster, Secretary-Treasurer.

Pickens County Medical Society has elected Dr. J. L. Valley, Pickens, President; Dr. J. W. Potts, Easley, Vice-President; and Dr. N. C. Brackett, Pickens, Secretary-Treasurer.

Ridge Medical Society has elected Dr. P. A. Brunson, Ridge Spring, President; and Dr. T. K. Fairey, Johnston, Secretary-Treasurer.

Sumter County Medical Society has elected Dr. M. E. Parrish, President; Dr. C. R. F. Baker, Vice-President; and Dr. E. Alex Heise, Secretary-Treasurer, all of Sumter.

York County Medical Society has elected Dr. W. E. Simpson, Rock Hill, President; Dr. Ben N. Miller, Hickory Grove, Vice-President; and Dr. E. E. Herlong, Rock Hill, Secretary-Treasurer.

Dr. Leo F. Hall, Radiologist and Physician at State Park, has resigned to enter practice in Columbia. Dr. John M. Preston succeeds Dr. Hall.

Dr. W. R. Tuten, Jr., Camden, has moved to Fairfax where he will assist his father in the practice of medicine.

Continued on page 70

when Child-Bearing is Contraindicated
With tuberculosis, under present day conditions, more than ever a leading cause of death in women of the childbearing age, modern medicine generally deplores the intercurrence of pregnancy, as imposing a dangerous strain which is best avoided until the pathologic process has been well arrested.
For these, or for other cases in which childbearing is contraindicated —Ortho-Gynol affords a superior vaginal jelly with instantaneous spermicidal action, ready miscibility and buffered acidity . . . conforming in every aspect of its physical and chemical properties to the physician's physiological criteria—and to his patient's esthetic preference. Ortho Products, Inc., Linden, N. J.
ortho-gynol
VAGINAL JELLY
Active ingredients: ricinoleic acid, boric acid, oxyquinoline sulfate.

Continued from page 68

Dr. Roe E. Remington, Professor of the Food Research Department, Medical College of the State of South Carolina, Charleston, has tendered his resignation.

Dr. Roy Smarr, Resident Physician at the State Hospital, has resigned to enter practice with offices at 1427 Pickens Street, Columbia.

Dr. Adams Hayne, for many years head of the State Health Department, Columbia, has been succeeded by Dr. Ben Wyman. Dr. Hayne will serve in another connection.

Dr. Gertrude Holmes, Greenville, has been commissioned a Captain in the Army Medical Corps and has reported to Fort Devens, Boston, Massachusetts for induction. Dr. Holmes, a diagnostician, volunteered for service.

Dr. Edgar A. Hines, Jr., formerly of Seneca, secured a fellowship with the Mayo Foundation and is now Assistant Professor of Medicine at the University of Minnesota.

Dr. Patricia A. Carter, formerly of Jersey City, New Jersey, has recently opened an office at 148 Rutledge Avenue, Charleston.

Dr. Edward F. Parker, Captain, Medical Corps, U. S. Army, is stationed in a base hospital in North Africa and his assignment is thoracic surgery. He is attached to the Vanderbilt Unit.

Dr. J. McM. Davis, formerly of Columbia, is serving with the Army overseas.

Dr. Frank Woodruff, Woodruff, has opened an office in Greer.

Dr. John W. Cathcart, Winnsboro, and Miss Margaret Virginia Caughman, Columbia, were married recently.

Dr. William Hugh Hall and Miss Rosemary Patricia Dickinson, both of Charleston, were married recently.

DEATHS

Dr. Halbert Hammond Acker, Anderson, aged 56, died recently of heart disease.

Dr. Curran B. Earle, Greenville, aged 69, died March 21.

Dr. John van de Erve, Charleston, aged 73, died recently of coronary occlusion.

Classified Advertisements

FOR SALE—Portable Fischer X-ray Machine and a Fischer Ultra-Violet Machine. Write J. G. A., care Southern Medical Journal.

WANTED—Location or connection for general surgery or combined with moderate amount of general practice. American, married, military exempt, age 45, no disability and able to work. A school, good training and experience, references. Answer K. M. J., care Southern Medical Journal.

WANTED—Zeiss slit lamp. Also, Zeiss compound slide extension stand with chin rest. Write Dr. Joseph Dudgeon Walker, 3618 Fannin Street, Houston 4, Texas.

LANTERN SLIDES—Doctors, Teachers, Illustrators: use lantern slides at your next meeting. It is impossible to discuss a topic that includes illustrations to a large audience in a short time and discuss it right. Any material such as charts, drawings, photographs, x-rays, etc. can be made into your favorite size slide. More and more Hospitals and Medical Schools are employing their use today for better teaching. Mounted in glass, clear and bright as the original itself. Write Tommy S. Gibson, Photographer, 2218 State Street, Nashville, Tennessee.

EDITING—Preparation of papers and reports, indexing, abstracting, bibliographies and similar services to physicians. Address inquiries to Elizabeth M. McFetridge, M.A., 4810 St. Charles Avenue, New Orleans 15, Louisiana.

BOOKBINDING—Southern Medical Journal bound in attractive, substantial Buckram Library Binding, backs gold tooled, $2.00 per volume. Write us for prices on other books you want bound; magazines, journals, Bibles or anything you want to put in book form. Reference. Southern Medical Association. Alabama Trade Bindery, General Bookbinders, 1627½ First Avenue, North, Birmingham, Alabama.

Dr. J. L. Jefferies, Spartanburg, aged 77, died recently.

Dr. W. Y. McDaniel, Taylors, aged 77, died recently.

Dr. John Green Pittman, Gaffney, aged 68, died recently of coronary thrombosis.

TENNESSEE

Vanderbilt University School of Medicine, Nashville, recently conferred a degree of Master of Public Health on Dr. Fridgeir Olason and Dr. Fritz Plotke. Dr. Olason came to Vanderbilt in 1942 from Reykjavik, Iceland. Dr. Plotke came the same year from the state hospital in Manteno, Illinois.

Dr. A. E. Hardison, Memphis, recently connected with the Memphis and Shelby County Board of Health as Director, Division of Venereal Disease Control, has resigned to become Regional Medical Director for the Red Cross and is stationed in Atlanta, Georgia.

Dr. James Bradley, who practiced medicine in Memphis for a number of years, has returned and is connected with the Board of Health in child hygiene work.

Dr. A. L. Jenkins, Pruden, has moved to Alva, Kentucky.

Dr. C. T. Cox, Westport, has moved to Hollow Rock.

Dr. S. J. Axelrod, Chattanooga, has moved to the Office of Labor, War Food Administration, Washington, D. C.

Dr. W. L. Howard, Memphis, has moved to Weston State Hospital, Bolivar.

Dr. David Galloway and Miss Alice Neil, both of Memphis, were married recently.

Dr. Joseph Cooke Orman, Nashville, and Miss Margaret Josephine Griesback, Memphis, were married February 21.

Dr. Edward Buist Wells, Nashville, and Miss Rosemary Lamprakes, Rochester, New York, were married recently.

DEATHS

Dr. William James Astrapp, South Pittsburg, aged 60, died recently.

Dr. Samuel S. Briggs, Nashville, aged 76, died recently of heart disease.

Dr. William Henry Sullivan, Cleveland, aged 73, died recently of coronary thrombosis.

Dr. Charles F. Clayton, Knoxville, aged 58, died recently.

Dr. W. M. Cunningham, Cumberland Furnace, aged 58, died recently.

Dr. Hugh W. Priddy, Memphis, aged 57, died recently.

Dr. John Overton, Nashville, aged 64, died recently.

Dr. William Byrd Young, Nashville, aged 78, died recently.

TEXAS

Baylor-Knox-Haskell Counties Medical Society has elected Dr. D. C. Eiland, Munday, President; Dr. James Cade Head, Vice-President; and Dr. R. L. Newsom, Munday, Secretary-Treasurer.

Bowie County Medical Society has elected Dr. A. W. Roberts, President; Dr. C. H. Frank, Vice-President; Dr. William Hibbitts, Second Vice-President; and Dr. C. A. Smith, Secretary-Treasurer, all of Texarkana.

Cooke County Medical Society has elected Dr. S. M. Yarbrough, President; Dr. Ira L. Thomas, Vice-President; and Dr. H. H. Terry, Secretary-Treasurer, all of Gainesville.

Wharton-Jackson-Matagorda-Fort Bend Counties Medical Society has elected Dr. C. A. Shoultz, Bay City, President; Dr. H. W. Reeves, El Campo, Vice-President; and Dr. B. F. Roche, Bay City, Secretary-Treasurer.

Dr. Tinsley R. Harrison, formerly Professor of Medicine of Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina, has been appointed Dean of Southwestern Medical College of the Southwestern Medical Foundation, Dallas. He will also serve as Executive Professor of Experimental Medicine and Professor of Medicine. Dr. Donald H. Slaughter, Dallas, formerly Acting Dean, will remain as Dean of Students at the medical college.

Dr. Thomas P. Andrews has resigned as Health Officer of Brownsville.

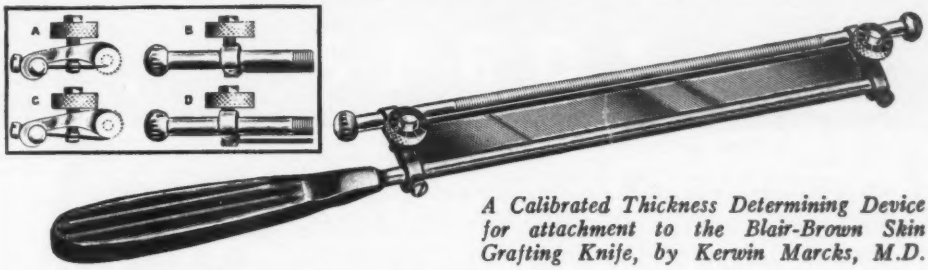
Dr. Charles A. Wyatt, Marshall, has been appointed Health Officer of Harrison County.

Dr. James L. Rentfro, Brownsville, was recently honored at a joint dinner given by doctors of Matamoros and Brownsville and presented with a certificate of merit. He was paid special tribute for his work among Latin American people on both sides of the Rio Grande.

Dr. E. D. Mills, Brownsville, has been appointed to fill the vacancy of Dr. G. B. Stephenson, who resigned as one of the Board of Directors of the City-County Hospital, Beaumont.

Continued on page 72

For An Improved and Simplified Technic in Split Skin Grafts



A Calibrated Thickness Determining Device for attachment to the Blair-Brown Skin Grafting Knife, by Kerwin Marcks, M.D.

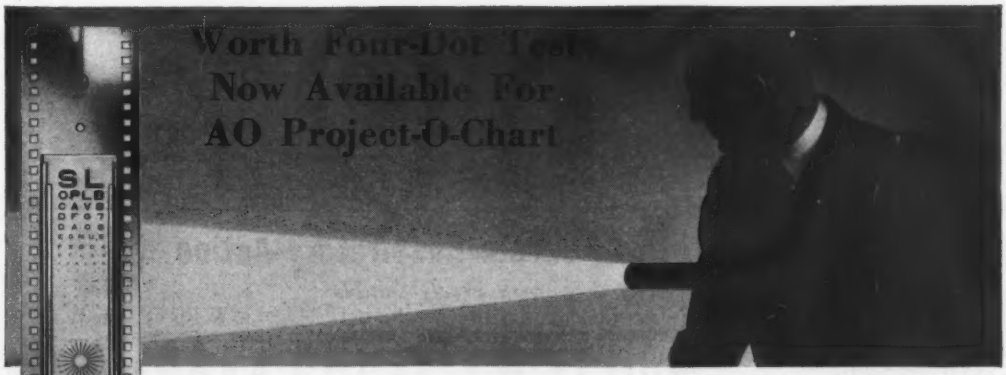
This attachment for the widely used Blair-Brown skin knife provides the operator with a simplified means of cutting uniform and accurate thicknesses of split skin grafts.

In use, the thickness of the desired skin graft may be set before the operation and can be changed at will during the operation by simply readjusting the knurled and calibrated screws. The threaded rod grips the skin and its extra length over the distance between the clamps allows the knife to be worked to and fro.

Illustrations "A-B" and "C-D" above show how the set screws regulate the distance between the cutting edge of the knife and the threaded grip rod. The large illustration shows the attachment mounted on the knife ready for use.

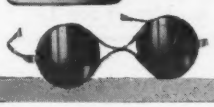
A-B967 — Blair - Brown Skin Grafting Knife complete with the Marcks Thickness Determining Attachment $18.50

A. S. ALOE COMPANY, 1831 Olive St., St. Louis, Mo.



With the Project-O-Chart, you can now perform the Worth four-dot test for binocular vision—with the new AO Worth Four-Dot Test Set, No. 1215-W. This set consists of a new Project-O-Chart slide and a reversible spectacle frame equipped with a red and a green filter.

The slide has four colored filters arranged in diamond formation. The top filter projects a red round dot; the two middle filters project green dots; and the bottom filter projects a white dot. In addition, this slide contains an assortment of letters from 20/200 to 20/10, a complete set of illiterate E's and an astigmatic dial. Ask your AO representative to show you one of these test sets. Price $10.00.



American Optical COMPANY

Continued from page 70

Dr. Charles R. William, Colonel, Medical Corps, U. S. Army, Mineral Wells, is in charge of a large general hospital in India.

Dr. I. F. Brake, Captain, Medical Corps, U. S. Army, San Augustine, is Third Battalion surgeon with a tank regiment in Italy.

DEATHS

Dr. William Beall Carrell, Dallas, aged 60, died February 23 of heart disease.

Dr. Galen Lamar Eads, Marshall, aged 51, died recently of injuries received in an automobile accident.

Dr. James M. Still, Dallas, aged 76, died recently of carcinoma of the throat.

Dr. S. J. Underwood, Hale Center, aged 70, died recently.

Dr. William Turney White, Dallas, aged 65, died February 27.

Dr. Edward C. Williams, Collinsville, aged 70, died recently of coronary occlusion.

VIRGINIA

A Committee on Rehabilitation to cooperate with the Rehabilitation Division of the State Board of Education in its work for the rehabilitation of the physically impaired, is composed of the present Committee on Public Relations and Medical Service, augmented by two men from Richmond, and the members are Dr. William B. Porter, Richmond, Chairman; Dr. J. M. Emmett, Clifton Forge; Dr. H. B. Mulholland, University; Dr. I. C. Riggin, Richmond; and Dr. T. Dewey Davis, Richmond.

Virginia State-wide Safety Conference will be held in Roanoke, May 25-26. Dr. W. R. Whitman, Roanoke, has been appointed a delegate from the Medical Society of Virginia; and Dr. Herbert C. Lee, Richmond, a representative from the Society on the Committee for Procurement and Assignment of Nursing Service in Virginia.

Dr. Sidney G. Page, Major, Medical Corps, U. S. Army, Richmond, has returned from overseas duty and is now chief of the Medical Service, Station Hospital, Indiantown Gap, Pennsylvania.

Dr. Richard C. Neale, Richmond, announces the removal of his offices to the Medical Arts Building.

Dr. Edwin P. Lehman, Charlottesville, was elected Vice-President of the American Society for the Control of Cancer at its meeting held in New York City, March 11.

Dr. Walter L. Barnes, formerly connected with the U. S. Public Health Service, has been appointed Coroner for Petersburg, succeeding Dr. E. L. McGill, who resigned after having held the position since November 1919. Dr. Barnes was also appointed as City Physician, succeeding Dr. C. W. Lynn, who resigned several months ago.

Dr. Fay Ashton Carmines, Odd, and Miss Lillie Weeks Burns, Coldsboro, North Carolina, were married March 4.

DEATHS

Dr. David Leighton Kinsolving, Abingdon, aged 77, died March 12.

Dr. Claude Emmett Stump, Richmond, aged 51, died March 6.

WEST VIRGINIA

Dr. Claude R. Davisson, Weston, who has been serving as a Resident at Mercy Hospital, Baltimore, Maryland, has been commissioned a First Lieutenant in the Army and ordered to active duty.

Dr. William T. Henshaw, Charleston, has been named Acting Medical Director for the Workmen's Compensation Fund to succeed Dr. Ernst F. Gott, who will resume practice in Charleston.

Dr. Arthur R. Gersabeck, Captain, Medical Corps, U. S. Army, is with the armed forces in England.

Dr. James R. McClung, Major, Medical Corps, U. S. Army, Wheeling, is overseas.

Dr. E. Newton DuPuy, Captain, Medical Corps, U. S. Army, Beckley, who has been with our armed forces in North Africa, Sicily and Italy, has been assigned to the Crile General Hospital, Cleveland, Ohio. He was awarded the silver star for gallantry in action in the Tunisian campaign.

Dr. J. L. Roark, Kimberly, has moved to South Charleston.

Dr. F. J. Zsoldos, Pineville, has moved to Glen Rogers.

Dr. Karl H. Trippett, Mabscott, has moved to Galloway.

Dr. C. F. Johnston has moved from Welch to Charlottesville, Virginia, where he is attached to the staff of the University Hospital.

Dr. Harry A. Smith, Charleston, has moved to Huntington.

Dr. Reuben Rubisoff, formerly of Logan, is attached to the staff of Columbia Hospital, Columbia, Mississippi.

Dr. John W. Yost, formerly with the Williamson Memorial Hospital, Williamson, has moved to Princeton where he will engage in general practice.

Dr. Joseph M. Foley, who moved from Peoria, Illinois to Wheeling several years ago, has returned to Peoria to practice medicine.

DEATHS

Dr. Samuel Cecil Austin, Charleston, aged 65, died March 11, as result of injuries received in an automobile accident.

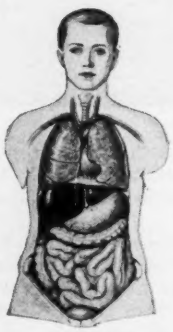
Dr. Clayton Calvin Egan Carson, Gassaway, aged 43, died recently.

Dr. David Beale Ealy, Moundsville, aged 55, died recently of heart disease.

Dr. Horace L. Goodman, Ronceverte, aged 67, died February 28 of cardiac decompensation.

Dr. Franklin Taylor Scanlon, Morgantown, aged 65, died recently of mesenteric thrombosis.

Dr. Erra Delafield Stump, Charleston, aged 59, died recently of cerebral hemorrhage.



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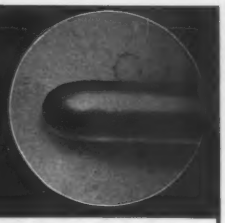

FOR safety and reliability use composite Radon seeds in your cases requiring interstitial radiation. The Composite Radon Seed is the only type of metal Radon Seed having smooth, round, non-cutting ends. In this type of seed, illustrated here highly magnified, Radon is under gas-tight, leak-proof seal. Composite Platinum (or Gold) Radon Seeds and loading-slot instruments for their implantation are available to you exclusively through us. Inquire and order by mail, or preferably by telegraph, reversing charges.

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To help relieve neuritic symptoms of pregnancy

MEAD'S BREWERS YEAST

is proving of increasing value as a routine part of the patient's diet in treating such symptoms as nausea, vomiting, dyspnea, pains in legs and arms, muscle weakness and fatigue.

In one series, it was found that the physical, mental and emotional status of 120 pregnant and lactating women receiving Mead's Brewers Yeast and other foods rich in vitamin B was superior to that of a control group of 116 women.

Mead's Brewers Yeast contains the entire vitamin B complex, including thiamine, riboflavin and nicotinic acid. It may be given in tablet form and/or in powder form. The powder may be quickly shaken up with milk in an ordinary cocktail shaker. It also mixes well with tomato juice or ketchup.

Each Mead's Brewers Yeast Tablet contains not less than .06 mg. thiamine (vitamin B_1), .02 mg. riboflavin (vitamin G), and .15 mg. nicotinic acid, together with other factors of the vitamin B complex commonly occurring in nonviable brewers' yeast.

Mead Johnson & Co., Evansville, Ind., U.S.A.

NUTRITIONAL ANEMIA IN INFANTS

REASONS FOR EARLY FEEDING OF PABLUM (OR PABENA)

1. The infant's initial store of iron is rapidly depleted during the first months of life. (Mackay, [1] Elvehjem[2]). About 30% of the iron freed from the hemoglobin during the first two months is lost, and while hemoglobin destruction takes place, all infants are in negative iron balance. (Jeans,[3] and Usher, et al.[4]).

2. During the early months of life the infant obtains very little iron from milk — 1.44 mg. per day from the average bottle formula of 20 ounces or possibly 1.7 mg. per day from 28 ounces of breast milk. (Holt,[5] Jeans[3]). The incidence of nutritional anemia has been found to be high among infants confined largely to a diet of cow's milk. (Davidson, et al.,[6] Usher, et al.,[4] Mackay[1]).

For these reasons and also because of the low hemoglobin values so frequent among pregnant and nursing mothers (Strauss,[7] and Gottlieb and Strean[8]), the pediatric trend is constantly toward the addition of iron-containing foods at an early age, both to normal infants and those with pylorospasm. (Neff,[9] Blatt,[10] Brennemann,[11] Monypenny[12]).

THE CHOICE OF THE IRON-CONTAINING FOOD

1. Many foods high in iron actually add very little to the diet because much of the mineral is lost in cooking or because the amount fed is necessarily small or because the food has a high percentage of water. Strained spinach, for instance, contains only 1 to 1.4 mg. of iron per 100 Gm. (Bridges[13]).

2. To be effective, food iron should be soluble. Some foods fairly high in total iron are low in soluble iron. Thus egg yolk and liver have less soluble iron than does farina, which is very low in total iron. (Summerfeldt[14]). Oxalate-containing leafy vegetables are low in soluble iron and appear not to be well utilized as a source of iron by infants. (Kohler, et al.,[15] and Stearns[16]).

3. **Pablum (and Pabena) are high both in total iron (30 mg. per 100 Gm.) and soluble iron (7.8 mg. per 100 Gm.) and can be fed in significant amounts at an early age, without digestive upsets. (Blatt,[10] Monypenny[12]). Clinical studies of sick and well babies have shown Pablum to be of value in raising hemoglobin values (Crimm, et al.,[17] Summerfeldt and Ross[18]), even when egg yolk and spinach were not effective (Stearns[16]).**

Pablum, a palatable mixed cereal food, vitamin and mineral enriched, and cooked thoroughly and dried, consists of wheatmeal (farina), oatmeal, wheat embryo, cornmeal, powdered beef bone, sodium chloride, alfalfa leaf, brewers' yeast, and reduced iron. (The oatmeal form of Pablum is called Pabena.)

[1-18] Bibliography on request.

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Transitional Therapy with

THEELIN

● Distressing disturbances of the menopause, the autumn of life, usually respond promptly to the administration of the pure, crystalline estrogen Theelin*. It effectively "tides the patient over" this transitional period until endocrine readjustment occurs, and is also invaluable in the management of cases of surgical menopause.

In addition, disorders such as senile vaginitis, kraurosis vulvae, and pruritus vulvae due to estrogenic deficiency suggest the use of Theelin, and gonorrheal vaginitis in children likewise responds to this therapy.

For maintenance between injections and for the treatment of milder menopausal symptoms, Theelol* Kapseals* and Theelin Suppositories, Vaginal, are available, the latter being particularly well adapted for the treatment of gonorrheal vaginitis.

Theelin in Oil is available in ampoules of 0.1, 0.2, 0.5 and 1.0 mg., in boxes of 6 and 50. Theelin, Aqueous Suspension, in 2 mg. ampoules, in boxes of 6 and 25. Theelol Kapseals, 0.24 mg., in bottles of 20, 50, 100 and 250. Theelin Suppositories, Vaginal, 0.2 mg., in boxes of 6 and 50.

*Trade-Marks Reg. U.S. Pat. Off.

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